IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

CYTIVA SWEDEN AB, and GLOBAL LIFE SCIENCES SOLUTIONS USA, LLC,	)	[redacted]
Plaintiffs,	)	Redacted: Public Version
v.	)	C.A. No. 18-1899-CFC-SRF
BIO-RAD LABORATORIES, INC.,	)	**CONSOLIDATED**
Defendant.	)	

DECLARATION OF AMY L. DEWITT IN SUPPORT OF PLAINTIFFS' MOTION TO EXCLUDE EXPERT OPINIONS OF DR. BRUCE GALE AND IN SUPPORT OF ITS MOTION TO EXCLUDE EXPERT OPINIONS OF DR. THOMAS KEARL

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CYTIVA SWEDEN AB, and GLOBAL LIFE SCIENCES SOLUTIONS USA LLC Plaintiffs, v. BIO-RAD LABORATORIES, INC., Defendant.	C.A. No. 1:18-cv-01899-CFC **HIGHLT CONFIDENTIAL-FILED UNDER SEAL**

DECLARATION OF AMY L. DEWITT IN SUPPORT OF PLAINTIFFS' MOTION TO EXCLUDE EXPERT OPINIONS OF DR. BRUCE GALE AND IN SUPPORT OF ITS MOTION TO EXCLUDE EXPERT OPINIONS OF DR. THOMAS KEARL

I, Amy L. DeWitt, declare and state as follows:

1. I am an attorney at Arnold & Porter LLP and am licensed to practice law in Washington, District of Columbia. I am admitted *pro hac vice* to this Court. I am counsel for Plaintiffs Cytiva Sweden AB and Global Life Sciences Solutions USA LLC (collectively, "Plaintiffs") in the above-captioned matter. I have personal knowledge of the facts set forth and if called to testify, I could and would testify competently thereto.

2. Attached hereto as Exhibit 1 is a true and correct copy of excerpts from the November 25, 2020 deposition transcript of Dr. Bruce Gale.

3. Attached hereto as Exhibit 2 is a true and correct copy of excerpts from the October 21, 2020 rebuttal expert report of Dr. Bruce Gale.

4. Attached hereto as Exhibit 3 is a true and correct copy of excerpts from the May 14, 2020 *Markman* hearing held in the above-captioned matter.

5. Attached hereto as Exhibit 4 is a true and correct copy of excerpts from the September 14, 2020 opening expert report of Dr. Bruce Gale.

6. Attached hereto as Exhibit 5 is a true and correct copy of excerpts from the August 10, 2015 deposition transcript of Thomas Koshy.

7. Attached hereto as Exhibit 6 is a true and correct copy of excerpts from the November 11, 2020 reply expert report of Dr. Bruce Gale.

8. Attached hereto as Exhibit 7 is a true and correct copy of excerpts from the November 18, 2020 deposition transcript of Kevin Petersen.

9. Attached hereto as Exhibit 8 is a true and correct copy of excerpts from a document Bio-Rad produced in this litigation bearing the Bates number BRGEDEL403802-826.

10. Attached hereto as Exhibit 9 is a true and correct copy of excerpts from a document Bio-Rad produced in this litigation bearing the Bates number BRGEDEL100355-368.

11. Attached hereto as Exhibit 10 is a true and correct copy of excerpts from the October 21, 2020 rebuttal expert report of Dr. Thomas Kearl.

12. Attached hereto as Exhibit 11 is a true and correct copy of excerpts from the November 23, 2020 deposition transcript of Dr. Thomas Kearl.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on December 15, 2020 in Washington, DC.

/s/ Amy DeWitt

Amy L. DeWitt

CERTIFICATE OF SERVICE

I, John W. Shaw, hereby certify that on December 15, 2020, this document was served on the persons listed below in the manner indicated:

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EXHIBIT 1

FILED UNDER SEAL

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

Cytiva Sweden AB and Global Life Sciences Solutions USA, LLC,
Plaintiff, Case No. 18-1899-CFC
-against-
Bio-Rad Laboratories, Inc.,
Defendant.

HIGHLY CONFIDENTIAL
VIDEO-RECORDED DEPOSITION OF
DR. BRUCE GALE
Zoom Videoconference
11/25/2020
8:28 a.m. (MT)

REPORTED BY: AMANDA GORRONO, CLR
CLR NO. 052005-01

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8:28 a.m. (MT)

VIDEO-RECORDED DEPOSITION OF DR. BRUCE GALE, held virtually via Zoom Videoconferencing, before Amanda Gorrono, Certified Live Note Reporter, and Notary Public of the State of New York.

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DR. BRUCE GALE	MS. SKLENAR	7

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A. Sure. I mean, you distinguish different types of chromatography by the type of material or the, I guess, the interactions that occur in the chromatography experiment.

Q. So what specific components are needed to do ion chromatography that you wouldn't need to do other types of liquid chromatography?

A. Well, the only thing that would be different is the type of column.

Q. That's the only difference?

A. Yes.

Q. Okay. The electric field flow fractionation techniques that you described, that you have experiments with, is that a type of liquid chromatography?

A. Yes.

Q. Are there types of chromatography you have experience with that you wouldn't consider to be liquid chromatography?

A. I mean, there's like gas chromatography, and there may be some other nonliquid types of chromatography. But there's -- there's

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literally thousands of types of liquid chromatography.

Q. But in terms of my question, is there any type of chromatography you have experience with that you would not consider it to be liquid chromatography?

MR. DAMON: Objection to the form.

A. I mean, the chromatography experiments that I do are liquid chromatography. I only do fluid flow stuff, so I guess the answer is no.

Q. Okay. Do you know what the term "Karl Fischer titration" means?

A. Yeah, I have a general sense of what it means.

Q. Are you a -- have you ever performed a Karl Fischer titration?

A. I have not.

Q. So you would not consider yourself to be a expert in Karl Fischer titrations; is that fair?

A. That's fair.

Q. And similarly, you wouldn't consider

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yourself to be an expert in ion chromatography, right?

A. I mean, I'm familiar with ion chromatography, but as noted, I'm -- I haven't ever done it before, so I wouldn't say I'm a specific expert in that particular forum.

Q. So you're not -- you wouldn't say you're specifically an expert in ion chromatography, correct?

A. I generally have expertise in chromatography as a field.

Q. But not ion chromatography?

A. I said, I have a general understanding of ion chromatography. I haven't done it before.

Q. Okay. So I want to ask you -- just, if I -- if I restrict the questioning to the last 12 years, okay? So since 2008, have you personally performed liquid chromatography since 2008?

A. Yes.

Q. And on what machines did you do that?

A. I mean, we -- as I noted, we

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primarily do electrical field flow fractionation. We build our own instruments. I've done -- not all the time, but I regularly work with my students and do liquid chromatography in these electrical field flow fractionation instruments.

Q. So have you done liquid chromatography personally over the last 20 -- or 12 years on -- on any systems other than electrical field flow fractionation systems?

A. Well, other than the Applikon instrument, we -- I worked with Kevin and Travis to set that up to do chromatography.

Q. Well, we're going to come back to that. Anything else over the last 12 years, other than --

A. Well, I've done electrophoresis -- or I helped build an EKKC. I'm trying to remember what the acronym is for. Electrokinetic -- I can't remember what the second K is for. But it's a version of, we'll call it, electrophoresis and electrical field flow fractionation, kind of combined.

Q. Have you ever performed liquid chromatography using an NGC system?
A. I have not personally done that.
Q. Have you ever been present where anyone else had performed liquid chromatography using an NGC system?
A. I have.
Q. When was that?
A. I don't remember the exact date, it was 2015 probably.
Q. Okay. So it's been about five years since you've seen anyone perform liquid chromatography using an NGC system?
A. That's correct.
Q. And have you ever performed liquid chromatography using an ÄKTA system?
A. I have not.
Q. Have you ever been present when anyone has performed liquid chromatography using an ÄKTA system?
A. I've seen an ÄKTA system. I can't remember if they were doing chromatography when it

was -- when I saw it.
Q. So you don't know one way or another whether you've ever witnessed anyone performing liquid chromatography with an ÄKTA system?
A. That's correct.
Q. What is -- are you familiar with the term fluid flow path as it relates to liquid chromatography?
A. Sure.
Q. What is a fluid flow path?
A. That's the -- well, it's the trail or the, you know, the physical location of where fluid moves when chromatography is being performed.
Q. And what does it mean to modify the fluid flow path of a liquid chromatography system?
A. I would assume that that means you just change something in the flow path. It could be change the connection, change the length of a tube, change the sequence of how, you know, components in the liquid chromatography system are connected. I mean, it may even be just bending a tube to, you know, put it into a -- a different shape or something

like that.
Q. You said "I would assume that it means," and then you gave a list. Is there a reason that you are assuming what it means rather than knowing what it means?
A. Well, that's my interpretation. There's not a difference.
Q. And have -- where is your understanding about what it means to modify a fluid flow path -- where does is that understanding come from?
MR. DAMON: Objection to form.
A. That would come from, you know, my personal experience in using chromatography systems and, I mean, the documents that I've seen in the specification and in this case.
Q. Have you personally modified the fluid flow path of a liquid chromatography system?
A. Yes.
Q. When was that?
A. I mean, every time we do chromatography experiments, we usually adjust the

flow path. We put connections in or out, maybe change the sample lube, put in a different pump. You know, I don't do it every day, but probably every few months I'll -- I'll do something like that.
Q. What is PCR?
A. Polymerase chain reaction.
Q. What direct experience do you with PCR?
A. I mean, I've -- I've done PCR. I've built PCR instruments. I've written papers on PCR. I have patents on PCR instruments. I don't know what you want to know.
Q. Are PCR instruments automated fluid handling systems?
A. Not the ones -- not -- not typically.
Q. So you wouldn't consider an instrument that does PCR -- you wouldn't say that that could be a fluid handling system?
A. I mean, it could be. You could do PCR in a fluid handling system. Most PCR instruments are -- they don't usually have flow paths or anything like that. They just are a kind of a dispense and

A. I don't.
Q. Have you had discussions with anyone affiliated with Cytiva or any of its predecessors on anything relevant to the subject matter of this litigation?
A. Actually, let me just -- I have talked to folks that used to be at Biacore, and I can't remember if Biacore is now part of Cytiva. I'm assuming that it is. And I mean we talked to people at Biacore before, but anyway -- but that's -- I mean, that's totally unrelated to this technology. And I haven't talked to anyone at Cytiva in the last, whatever, that I'm aware of.
Q. Okay. So, I want to turn to your work on this matter. So we talked about the -- the declarations that were offered in 2014 and 2015. In terms of 2016, do you have a sense -- I know at some point there were some experiments with the 2040 System. But was there any work that you did in 2016 as it relates to the present dispute? Other than what we're going to get to is that experiments with the 2040 System.

A. Well --
MR. DAMON: Form.
A. My recollection is not great since that was a long time ago, but I believe the IPR may have been going on in 2016 still.
Q. You say your recollection isn't great. What do you mean? Your recollection is not great of the specific work you were doing in 2016?
A. I don't recall if -- yeah. Basically I don't recall where we were in this case at that -- at that point. I don't recall if it was -- the IPR was done or if it was in the middle of it, or if it was -- the case stretched on over an amazingly long period of time, so I don't recall.
Q. Are you somebody who prides yourself on having a good memory?
A. No. I usually remember things -- well, I have found that as I've gotten older, that I get so much information that I just don't remember things very well anymore. I remember important things, but things that are not important, they're -- they're gone. You know, I will have forgotten this

conversation probably next week, so take that however you will.
Q. How good is your recall, sitting here today, about specific events that occurred in 2016?
A. I remember -- I mean, I remember -- I think I had a deposition in 2016 related to the IPR. I remember working on the 2040 instrument with Kevin and Travis. I remember having some conversations, but that's, you know, the -- if you just said, you know, tell me what's -- you know, everything you did, I wouldn't be able to do that. But I also wouldn't be able to do that with what happened last month. So, I'm not sure how that's (inaudible).
Q. How good is your recall with specific conversations that you had in 2016 relating to your work endeavors?
MR. DAMON: Objection to form.
A. They're -- I'm not going to remember much of any specific conversation.
Q. Are you somebody who takes notes of your conversations with individuals for work purposes?

A. Not usually.
Q. So in terms of your work, for example, in your lab overseeing your students and having discussions, is that something you keep records of and make notes about?
A. I mean, I -- with regular meetings, I'll, you know, jot down one or two things that maybe we talked about we're going to work on in the next week, but that's about the extent of it. I actually make my students keep notes, and they keep them in places where -- and I bring them to my meetings and I just make sure that those are accurate. And I have access to their notes and that way I can have a conversation with them, and I'm not the one that has to keep all the records.
Q. So let's -- let's turn to some exhibits. You issued three reports for purposes of this case within the last few months, correct?
A. That's correct.
Q. Okay. And I'm going to just mark all of them. I know, of course -- I understand you have copies in front of you, so whatever is easier. But

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A. Probably two.
Q. And who were those folks?
A. I can't remember the woman's name that's in my report, Schaffer or something like that. And I talked to John Cassingham.
Q. And what did you talk to Ms. Schaffer about?
A. I think the primary focus of that questioning is, you know, some questions about how the N -- NGC operates and what kind of preparation you'd have to do to use an NGC system.
Q. Did you have any discussion with her on any issue beyond what's recited in your report?
A. Probably.
Q. On what?
A. I -- I don't recall. I mean, we had a conversation for half an hour, and the relevant parts I put in my report.
Q. Okay. So you can't recall whether there's anything specific that you discussed with her that's not in your report, right?
A. Correct.

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Q. And what about John Cassingham, what did you talk to him about?
MR. DAMON: Objection, privileged. Excuse me one second.
I caution you to not release -- disclose anything that's privileged, but otherwise you can answer the question.
A. I think -- John's, I think, the -- I don't, the chief attorney or whatever for Bio-Rad, and he was present at the discussion with Ms. Schaffer, I believe. So it was, you know, "Hi, how doing," "Good to see you again," that sort of stuff.
Q. Did -- did Mr. Cassingham add anything or say anything relevant to the subject matter of your report?
A. No. I don't recall. I don't remember anything substantive.
Q. Okay. And you're not sure if you took notes; is that right?
A. Yeah. As I said before, I'm -- I'm not a big note taker. I might have written down one or two things and nothing Mr. Cassingham said down -- or said, because I don't think he said anything interesting.

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Q. So did you personally -- and I mean you -- did you personally do any experiments for purposes of your analysis in this case?
A. I mean, I worked closely with Kevin Petersen and Travis White to do the experiments. Did I push all the buttons? No. Did I push some buttons? Yes. I'm -- I'm not sure what -- that I -- what I did or didn't do. But I -- you know, we did it as a group.
Q. So you're saying -- you're talking about the experiments that occurred in 2016?
A. That's correct.
Q. Okay. And do you have any notes relating to those experiments?
A. Not that I'm aware of.
Q. You personally did not take notes reflecting the 2016 experiments; that is right?
A. I don't know if I took notes or not. I don't have any that I relied on or used or anything like that.

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Q. So you're aware that there's the Exhibit 4 which you referenced in your report, which is a write-up of the experiments, right?
MR. DAMON: Objection to form.
A. I don't recall what exhibit number it is, but I do recall that I submitted a report with my work.
Q. Okay. Who -- who authored that report?
A. Kevin --
MR. DAMON: Objection to form.
A. Kevin Petersen and I worked on it together.
Q. And can you -- if you would look at it, could you identify which portions each of you wrote?
A. No.
Q. Did you say you worked on it together? Did you actually draft portions of it?
A. Yes.
Q. You personally did?

A. Yes.
Q. But you can't tell me which portions you wrote?
MR. DAMON: Objection; form.
A. This was four years ago. I mean, he wrote up a -- he and I talked about an outline. He wrote up some pieces, I wrote up some pieces, we put them together. He -- I don't know. We worked together on writing the report.
Q. Okay. We're going to come back to this. Did you personally record any videos relating to the work that was done on the 2040 System?
A. Not at that time. I mean, I've taken some videos of -- well, I don't think so. I was trying to think if I took any other videos of that, but I don't -- I don't think so.
Q. So you personally haven't recorded any videos relating to any work on the 2040 System; is that right?
A. When we -- I know we took some pictures. And, you know, more recently when we were checking on some things about processors and some

other things like that in the 2040 System, we may have taken some videos. I don't specifically recall.
Q. So you don't know one way or another whether you recorded any videos related to work on the 2040 System?
MR. DAMON: Objection to form.
A. Yeah, I don't specifically recall if a video was taken or not. I mean, the videos that I've presented to you were not ones that I took myself. But I've -- I've taken pictures myself personally, and there may have been video or two in there. I don't recall.
Q. The videos that were presented with your report, you don't appear on those videos, right?
A. That's correct.
Q. And who recorded these videos?
A. Kevin Petersen.
Q. You weren't present when those videos were recorded, correct?
A. I was in the building I was in my office across the hall watching while they did it. So I don't know what "present" means.

Q. Could you see the experiments going on, as they were occurring?
A. Yes, my office window looks directly into my lab.
Q. Okay. So your testimony was you actually were sitting there watching the experiments?
MR. DAMON: Objection to form.
A. My testimony was that I was present, and that I could check on them whenever I wanted to.
Q. And you're -- you're basing that off of your recollection from what happened in 2016, right?
MR. DAMON: Objection to form.
A. Yes. And -- and I'm not saying -- I mean, those videos are hours long, right? So I may or may not have been there the entire time. But I do recall being in the building when Kevin and -- when Kevin did the experiments.
Q. How many times did you -- did you check on the experiment?
MR. DAMON: Objection; form.
A. You know, I don't -- I don't recall.

I know that I went in, saw it set up. You know, they -- I mean, I -- he -- Kevin was excited to show me that it was working and things like that. So I went in at least a couple of times.
Q. And do you recall what you specifically said?
A. I don't recall saying -- I don't recall now.
Q. Right. So -- so we're talking about four years ago, right?
A. Yep.
Q. Okay. So is there anything else you specifically recall, that you can testify under oath, occurred in November of 2016, in terms of your -- your going in to check or discussions that were had about the experiments?
A. I mean, you're asking almost an impossible question, that if it had happened last week I don't know if I could have -- I could answer in a reasonable way.
The question, as I interpret it, is, was I present? Was I involved with this process?

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Yes. Did I see what happened? Yes. Do I have videos that show that the whole thing worked? Yes. Did I understand how they programmed it? Did I understand what they moved around? Did I understand how the wiring and other things were done? Yes, I understand all of these things. I was present, I looked at it, I was involved.

Q. Okay. But do you recall anything else about specific discussions that occurred during those experiments in November 2016?

A. I mean, I meet with -- met with Kevin on at least a weekly basis, and often more often -- or more than that in this time frame. And we'd talk about, you know, the experiments, what they were trying to do, how they were going about it. I don't remember the details, but I remember that they took place, so...

Q. So you can't tell me any more about specific discussions that occurred in November 2016, correct?

A. No. I mean, well, you have everything that I have.

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Q. Okay. And you can't tell me more about the specific portions of the experiment that you personally observed, correct?

MR. DAMON: Objection; form.

A. Yeah. I don't recall specifically whether I watched this part or that part. But I do recall seeing the separations when they were done. I recall seeing the, you know, the machine in operation. That -- that's what I recall.

Q. You mentioned earlier that they moved parts around. Do you remember saying that?

A. Yeah. Some of the modules.

Q. Okay. So what do you recall specifically about what Mr. Petersen and Mr. White did in terms of moving modules around?

A. I asked them to move some modules. They -- I think -- I believe they videotaped that. They, you know, unscrewed the modules, moved them, you know, took one out -- or took two of them out, moved the one up. I think they actually moved four of them. And I -- actually, I did that on occasion with them so I understood how it happened and what it

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took and how hard or easy it was. So I've done that as well.

Q. So when did you do that?

A. I did that in 2016. I actually did it about a month ago too.

Q. So when you did it in 2016, which modules did you move around?

A. You know, I don't specifically recall. I believe in the report it says specifically which ones Kevin and Travis moved as part of the demonstration.

Q. But you don't recall which ones you moved around; is that right?

A. Yeah, I don't. You know, I probably started in the top left corner or something like that.

Q. You don't know for sure, do you?

A. No.

Q. Okay. And did you -- did you record the time it took somewhere?

MR. DAMON: Objection.

A. Did I -- did I record when I did it?

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Q. Yes.

A. I don't think so.

Q. So you didn't do that in 2016? You didn't actually use a stopwatch and record how much time it took you to move modules around, right?

A. No. Kevin and Travis did that, so I didn't do it separately.

Q. And when you said you experimented with moving modules around over the last month, is that right?

A. Yes.

Q. And when was that exactly?

MR. DAMON: Objection.

A. I don't know. Five weeks ago, something like that, six weeks ago.

Q. Was that before you finalized your first report?

A. I don't specifically recall. I think it was before the second report, but I'm not going to stake my life on that one.

Q. Which modules did you move around?

A. Moved around specifically -- well

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by a panel member," they do not say one way or another whether there can be additional sections, right?

MR. DAMON: Objection; form.

A. As -- as I said before, the -- what it says is that there's a section, you know, a non fluidic section, a fluidic section, and there's no other description of any other sections. And for that matter, there's no suggestion that there's other sections. But it also, as you point out, doesn't say there aren't other sections.

Q. Right. So you -- I just want to understand what you did in your analysis.

You felt like it was appropriate, though, to go to the specification, go to the file history, look at what the inventor said, and use all of that to interpret the claims as part of your analysis; is that what you're saying?

MR. DAMON: Objection.

A. I did that.

Q. Did you complete your answer?

A. Sorry. I said, yes, I -- I did that.

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Q. Okay. And you did that for purposes of considering the scope of the claims for your noninfringement opinions, correct?

MR. DAMON: Objection; form.

A. Well, I mean, for all of my opinions.

Q. Okay.

MS. SKLENAR: Let's look at your IPR declaration, which I believe is NN, and let's go to Page 9.

THE TECH: (Complying.)

Q. There, you see your prosed -- proposed construction of "a panel member."

Do you see that?

A. I see that.

Q. And you see the -- when we go back and look at the constructions that the court entered from your opening report, that's not a term that the court construed, right?

A. I --

MR. DAMON: Objection; form.

A. Yeah, I -- I don't recall seeing anything on how they construed that.

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Q. Okay. So this is neither your construction of a panel member from the IPR proceedings, it's neither a construction that Bio-Rad proposed, nor a construction reported document?

A. Sorry, is that a question, or...

Q. Yeah. Are you aware of whether Bio-Rad proposed the construction that we see in Paragraph 19 of your IPR declaration to the court in this case?

A. You know, I don't -- I don't know. I don't recall.

Q. And -- but we don't see that the court has entered an order adopting that construction of panel member, right?

A. Correct.

Q. The term "panel member" is agnostic to whether or not there are LEDs as part of the panel member, right?

MR. DAMON: Objection; form.

A. Yeah, I haven't seen anything that specifically describes LEDs in or with the -- anyways, there's nothing in the patent that addresses

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that.

Q. Right. So when we look at the claims that use the term "panel member," it's simply indifferent to whether or not there are electronics or electrical components as part of the panel member, right?

MR. DAMON: Objection; form.

A. I'm not sure that that's true. I mean, I think, it never contemplated electronics being in the panel member. I mean, the panel member is envisioned as a, as I read it, as, you know, like a solid piece of material that blocks fluids from passing through it.

Q. The claims don't say that the panel member has to be a solid piece of material, do they?

MR. DAMON: Objection; form.

A. The claims just mention a panel member. And then again, you go into the specification, you go into the file history, you know, those sorts of documents to try and understand what is meant by the term "panel member."

Q. So once again, for purposes of your

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infringement analysis, you're using the specification and file history to try to construe the term "panel member"; is that fair?

A. Yeah, and my just general understanding of what the words, you know, "panel" and "member" mean, you know.

Q. But you'll agree with me that nothing in the claim itself speaks to the composition of the panel member?

MR. DAMON: Objection to form.

A. I don't know that that's true. I don't recall -- sometimes they -- some of the claims say a panel member that does something, right. And in that case, then, the claims do construe what the panel member does.

Q. But you're not aware of any claims that say a panel member, for example, is a solid piece of material, right?

MR. DAMON: Objection; form.

A. No, but it -- yeah, sometimes it describes what it does and then you can interpret, you know, how -- how it accomplishes that or how you

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would accomplish that.

Q. And nowhere do any of the claims with the term "panel member" say that the panel member excludes electronics or electrical components, right?

MR. DAMON: Objection; form.

A. I don't recall anything that specifies that, but it's noted. The -- it's pretty clear in the patent that there's no contemplation of either fluidics or electronics being in the panel member. In fact, it specifically states that they'd be on opposite sides of a panel member.

Q. So this is another example where you're using the patent specification and file history to construe the claims?

MR. DAMON: Objection to form.

A. Yeah. Yes, I mean, that's -- I mean, I don't know how else to construe claims if I don't do it that way.

Q. Okay. You offered some opinions on the issue of indefiniteness, right?

A. I did.

Q. Now, I noticed that in your prior

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declarations about the '718 patent, and again, that was from your three declarations from 2014 and 2015, you never, there, in any of those declarations, take issue with whether any claim terms in the '718 patent were indefinite?

MR. DAMON: Objection; form.

A. Yeah, I -- I don't specifically recall, but I -- yeah, that -- that maybe true.

Q. Okay. So when is the first time that you considered that some of the terms within the Cytiva-asserted patents were indefinite?

A. Well, as I -- as I noted, I don't recall from those previous ones. There may be some discussion of it, but in the more recent reports that I wrote, indefiniteness, you know, popped up when suddenly based on -- I don't know if it's suddenly -- but on the way that these are construed and, in particular, how Dr. Wereley construed these sections and claims, it became impossible for me to -- to actually understand what the terms mean.

His use of the -- the terms and the, I guess, the definitions that I understood he was

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using were impossible to understand, which brings up the concept of indefinite.

Q. So I want to break that down a little bit more.

For the terms "fluidics" and "non fluidics," just as they appear in the claims themselves, you don't think that's indefinite, right, just the claims on their faces?

MR. DAMON: Objection to form.

A. Well, I -- I mean, when I read them, they mean something, right. I can -- I can understand what they mean. As I interpret what Dr. Wereley is saying, then they become indefinite.

Q. Okay. We're going to get to Dr. Wereley. But just the claims -- I want to -- I want to go step by step.

Just the claims with the panel member separating fluidics and non fluidics, you don't think the claims themselves, standing on their own, are indefinite, right?

MR. DAMON: Objection to form.

A. I mean, the -- yeah, as I -- let me

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A. Yeah. I mean I have -- I mean, I give a description here. I know what liquid chromatography is. It's -- liquid chromatography is not some, you know -- you know, strange term. It's used in the -- in the patents as a general well-known term of art. It's not some, you know, thing that's hard to figure out.

MS. SKLENAR: With -- with all due respect, I move to strike as nonresponsive.

Q. My question was you didn't look to see what evidence the judge had already considered that was submitted by Bio-Rad and rejected in the -- in the course of preparing your report, correct?

A. That's correct.

MR. DAMON: Objection.

Q. So let's go to Page 168, Paragraph 416, and I want to direct your attention to the beginning part of Paragraph 16. And you're -- you're talking about the 2040 System, and you're referencing the fact that they are modules that do not have any electronics on the same site as the -- of the mounting plate as the fluid handling. Do you

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see that?

A. I do.

MR. DAMON: Objection; form.

Q. Do you think that there's some sort of requirement for any of the Cytiva-asserted claims that there be no electronics on the same side of the panel member as the fluidic section?

A. So -- so my understanding is that the -- the patent, that the language, the -- the specification, the file history all, you know, required -- or suggested the way that the claims are used and the terms in the claims that there's a strict separation between electronics and fluidics.

Q. But -- go ahead.

A. Yeah.

Q. That's it? Sorry, did you complete your answer?

A. Yeah, so -- yeah, so my understanding is that there -- that the way the claims are written would require, you know, a strict separation of electronics and fluidics.

Q. But you understand that the judge

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didn't rule in that way?

MR. DAMON: Objection; form.

A. My understanding is that there's -- you know, there -- there could be other -- again, I don't know what the -- the judge was specifically thinking, but there's some suggestion that there's some other section that could, you know, have -- I don't know, we'll call it electronics or fluidics, or whatever the case maybe, that there's -- but as you -- but that does not change the -- the fact that there's only going to be -- I mean, that the -- the patent claims and the specification and the -- as I said, the -- the file history clearly point out that what was invented was strict separation of the electronics from the fluidics.

Q. So this is another example in Paragraph 416 where you're using a specification and file history to try and interpret the claims?

MR. DAMON: Objection; form.

A. As I've stated before, I -- I don't know how else you interpret claims other than to -- to look read and the claim. And if you need any

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other information, you look at the specification. You look at the file history.

Q. And that's something you felt like you needed to do for purposes of your opinion?

A. Yes.

MS. SKLENAR: So why don't I suggest we go off the record and just -- well, let's go off.

THE VIDEOGRAPHER: Time is 11:55 a.m., and we're going off the record.

(Recess taken.)

THE VIDEOGRAPHER: Stand by, please. The time is 12:31 p.m. Mountain Time. We're going back on the record.

BY MS. SKLENAR:

Q. Welcome back, Dr. Gale.

Did you speak to Bio-Rad's counsel during the break or any of the breaks today about the substance of your testimony?

A. I have not talked to them at all.

Q. Thank you.

Let's go back to the 2040 System, and let me first ask you about the manual. You're aware

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Q. So continuing down the page, there is a -- there are two chrom test2s. There is a chrom test2 and a chrom test2 copy.

Do you see that?

A. I do.

Q. Are those exactly the same?

MR. DAMON: Objection; form.

A. I -- I don't know. I -- I've only looked at the chrom test2.

Q. You haven't looked at the chrom test2 copy?

A. I have not.

Q. Chrom test2 says -- again, says, as the status, that it's stopped.

Do you see that?

A. I do.

Q. Do you know why that is?

A. I'm -- my general understanding is that it run -- it was running and it stopped, so it needs to be reset or the system needs -- or the -- one of the instrument, or one of the modules may need to be reset or put back in its starting point.

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Q. But you don't know specifically why it says stopped; is that right?

A. No, I don't even specifically know when this -- I mean, this -- I think this picture was taken by your team, and I don't know what they did or didn't do with it before they took this picture, so...

Q. You think the folks that I worked with may have stopped chrom test2?

A. I'm just saying I don't know. If I took this picture I could probably tell you what happened before it, but I didn't.

Q. So let's -- let's talk about chrom test2. What -- what work had to be done prior to the stage that chrom test2 was programmed into the system?

A. Well, the -- I mean, we received the instrument in a crate. It was -- I mean, this was a used instrument, right, so it didn't come with all the nice packaging and all that sort of things. So we had to uncrate it, we had to find a place to mount it in my lab, we had to figure out if we could plug it in and, you know, we had to figure that part out.

We had to read through the manual to understand how the instrument worked. We had to -- you know, we played with it, tried some things, made sure things worked, you know, made sure we had tubing and other components to run the instrument.

We had to come up with a choice for a chromatography application to demonstrate. We had to acquire the column and reagents for that. And then we, you know, programmed it and set it up.

Q. I want to focus on the programming. Was there planning that had to be done to -- for the specific program that was entered?

A. I -- I mean, yes, we had to, you know, figure out what the gradient was going to look like. We had to figure out what the capabilities of the various pumps and burettes and valves and things like that were. So we had to, you know, plan what the -- what this experiment would look like and then plan how to implement it.

And some of that was, you know, was done on the fly, let's see what happens if you turn

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this on; and then others were, once we understood that, we could kind of put together a framework for -- or a flowchart, if you will, or, anyway, some sort of process to allow it to work.

Q. So there was at some point a flowchart or -- or a documented process in terms of planning to program chrom test2, right?

A. You know, I don't specifically recall. I mean, I never made a flow chart, or I don't think that I've ever seen one.

But anyways, there was a process that we had to figure out on how to do it, could have been done -- in which we, Kevin and I and Travis, would chat and they'd, you know, explain what they programmed and what they setup and -- and where we were going, so...

Q. I'm not sure you answered my question.

Was there something documented, whether it be in a lab notebook or anywhere else, that related to the plan for the chrom test2 program?

A. I -- I mean, I don't recall right off

what's in Kevin's notebook or, you know, the other documents that -- whatnot. I think there might have been a spreadsheet that had some of the steps in it. But you -- you have what I have on that, so that's -- that's the documentation.

Q. But that's not all the documentation, right? There's some documents that no longer -- that you -- that are no longer in existence, as far as we know?

A. The only thing that we don't have is Travis White's notebook, so...

Q. Yeah. And to be clear, that is documentation that Cytiva has asked for that we've now learned is lost, correct?

A. Well, I --

MR. DAMON: Objection; form.

A. I've never seen it, I never relied on it, never used it. So I --

Q. You've never seen it?

A. Or at least -- I mean, I -- yeah, I don't have it. It was never in my possession.

Q. Have you ever reviewed it?

A. I don't believe so.

Q. So what -- okay. Well, I'm just going to go for it. How long was that notebook?

A. I said I don't know. I haven't reviewed it.

Q. And what did the notebook contain in terms of subject matter?

MR. DAMON: Objection; form.

A. There's you know, I don't know whatever notes that Travis felt he might need to have. I mean, Kevin was the primary -- primarily responsible for this, and he's the one that kept most of the documentation.

Q. Have you -- do you understand that Kevin Petersen's been deposed in this case?

A. I do.

Q. Have you read his deposition transcript?

A. I've -- I've seen a piece of it or something like that. I have not read all of it.

Q. Is that something that you read in preparation for your deposition today?

MR. DAMON: Objection to form.

A. Yeah, I read and I got through a few pages last week, but I didn't really get very far.

Q. And you read that in preparation for your deposition, correct?

A. I did.

Q. And that's something you didn't mention when I ask- -- asked you a question earlier about what you reviewed, correct?

A. Oh, yeah, I apologize. I totally forgot about that one.

Q. Is Kevin Petersen an honest person?

A. He's one of the most honest people you'll ever meet.

Q. And is he somebody that you find to be competent?

A. You're asking if he's confident?

Q. Competent.

A. Oh, competent. Sorry. He's very skillful, yes.

Q. At the time he was doing this work with you, what was his technical expertise?

A. He was working -- I mean, he was using our -- he's helping us to develop some of our field-flow fractionation instruments.

Q. And what was his -- I mean, he had obtained his undergraduate degree at that time, correct?

A. Correct.

Q. Was he a Ph.D. student at the time in 2- -- 2016?

A. Yes.

Q. And how many years of post- -- or of graduate work had he completed at that time?

A. You know, I don't recall right off. It's probably around three years, something like that.

Q. Is he somebody that you thought was technically gifted?

A. He's a normal student. He -- he's good. He did -- did a good job.

Q. Where is he working now?

A. Mayo Clinic.

Q. And what is he doing there?

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A. He's a postdoctoral researcher doing research on medical devices and microfluidics.
Q. Is he somebody that you respect?
A. Yes.
Q. Is he somebody that you have thought to have a faulty memory?
MR. DAMON: Objection; form.
A. Not particularly. He's very good at taking notes much better than I am.
Q. So do you understand that Dr. Petersen was asked about the role of Travis White in terms of the notebook?
MR. DAMON: Objection; form.
A. He may very well been. As I mentioned, I only got through the first few pages. I didn't really get very far.
Q. And so you didn't read the portion of Dr. Petersen's testimony where he explained what was -- what was contained within the notebook kept by Travis White?
A. That's correct.
Q. Who would have a better understanding

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between you and Dr. Petersen about what was in the notebook that Travis White kept?
A. Dr. Petersen.
Q. And you would expect that he actually reviewed that notebook; is that right?
MR. DAMON: Objection; form.
A. Most likely. I mean, I don't know one way or the other.
Q. Was he supervising Travis White?
A. Yeah. So Travis was essentially a student that asked if he could work in my lab, and so I assigned him to work with Kevin and so he was Kevin's helper.
Q. So if -- if Dr. Petersen testified that the lab notebook that Travis White kept had the details for the programming that went into the 2040 System, would you have any reason to dispute that?
MR. DAMON: Objection; form.
A. Not specifically, other -- I mean, the details of the programming are literally on the machine. I mean, I reviewed the program. It's on

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the machine. All the details are there.
Q. Well, you understand that we did dispute that, correct?
MR. DAMON: Objection; form.
A. I understand what? I'm sorry, I missed that.
Q. You understand that Dr. Wereley disputes that, correct?
A. I can't even imagine why he would dispute that. That's where the details are.
Q. Certainly the machine doesn't identify all the work that went into coming up with the program, preparing to enter the program, and then the time it took to enter the program and the complexity of the task, correct?
MR. DAMON: Objection; form.
A. It doesn't show all of those details. It shows the program. And I've used this program. It's really easy to program.
Q. Well, we're going to get to that.
So for chrom test2, what -- what is -- was your specific role with respect to

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chrom test2?
A. So, in general, I -- I talked to Kevin and said, "Look, we need to, you know, put this instrument out, get it set up, figure out a way to -- figure out, see if we can demonstrate a chromatography application on this instrument."
And -- and I met with Kevin on at least a weekly basis, and maybe more often, to see how he was progressing. And then if he had questions, he'd come into my office, and we'd talk about them.
Q. Were you physically present when any of the programs that we see in this exhibit -- I believe it's 335. 335. Were you physically present when any of the programs on the 2040 System were input into the system?
A. I don't specifically recall. I -- you know, I met with Travis and Kevin, and they showed me how it was working and how the power operated. But I couldn't say, hey, it was this program or that one, but I -- they -- I was shown how the program worked.

Q. So you -- you cannot say that you were physically present when chrom test2 was programmed into the 2040 System, correct?
MR. DAMON: Objection; form.
A. I can't say one way or the other.
Q. And you can't say what reference Dr. Petersen and Mr. White made of the -- the details of Mr. White's notebook and how they used them in the programming of the 2040 System, correct?
MR. DAMON: Objection; form.
A. I mean, I don't know specifically how they used it, but as -- as mentioned, the programming is actually fairly easy, and the -- the easiest way to program it and to do it would be just right on the system. It -- it essentially lays out a plan and a time course directly. It's like its own built-in flowchart. It's really nice.
Q. But you had to devise the actual -- someone had to devise the actual steps that would occur in chrom test2. Right?
MR. DAMON: Objection; form.
A. Yes, someone programmed it and

figured it out.
Q. All right. So someone had to devise exactly what they wanted chrom test2 to do, correct?
A. Right. And you can do that on the instrument. That's why I'm saying the details are on the instrument.
Q. But it's not -- so just so we're clear, how many steps actually are there in chrom test2?
A. You know, I -- I have never counted them.
Q. Do you have a ballpark estimate?
A. They're -- I mean, it depends on how you count steps and other things. Some things had to be repeated. I'm guessing 100 or, I don't know, 200. You know, it's not -- it's not ten, and it's not a million. So --
Q. Your estimate is there are 100 to 200 steps to chrom test2, correct?
A. Like I said, I have not counted them. That's my vague estimate of just looking over the program.

Q. Okay. And for each step, there were different inputs that had to be made per -- per step, correct?
MR. DAMON: Objection; form.
A. Yeah. So, for example, you chose one of the -- one of the modules. You say, okay, burette, we want to, you know, push or pull and do it at, you know, a rate. That -- I mean, it's pretty simple. Burette -- burette, you know, on, push, rate. And then, you set a -- and then there's a -- basically a time course, and then you tell it when to turn it off. Pretty easy.
Q. So in -- in programming a step, the variables would be the module that would do something, the length of time, correct?
A. Correct.
Q. And what else?
A. Depending on the module, it may be able to do multiple things. So I think the -- like the burettes have, like, five things that they can do. The valves, maybe it's got two or three. I know there's just a couple of options, and then you tell

it how long to do it.
Q. And so the steps had to be programmed in a particular order, too, correct?
A. Right. And like I said, it's basically on a -- it's on a time sequence. So you -- it's -- the time part is visual.
Q. Do you -- did you read Dr. Wereley's opinions about the programming that occurred on the 2040 System?
A. I don't know if I read all of them. I read some of them.
Q. He basically said that -- and I -- I will get the portion so we can look at it together, but just give me one second.
So if we look at Paragraph 345 of this rebuttal report, Page 414, you see that he says by his estimate there were at least 100 steps in the experiments? Do you see that?
A. I do.
Q. Do you -- are you in a position to dispute that?
A. No. I mean, that's essentially what

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split up the programming duties correct?
A. That's true.
Q. But you don't know which of the three it was, correct?
A. Yeah. It was irrelevant to me on how that specifically happened.
Q. And did you -- do you know the amount of time that it took to input chrom test2?
A. I know -- I don't specifically recall. I mean, I have some boundaries on that, because I -- I know Kevin and Travis only put in a certain amount of time on that, but I don't know specifically how much it took to program it.
Q. So it could have been five hours, ten hours, do you have any idea?
MR. DAMON: Objection to form.
A. I mean, it could have been a couple of hours. It could have been -- I'm assuming it was probably at least an hour. I mean, there's enough steps in there it would take sometime to input it. Some of this was almost surely trial and error. So, you know, what happens, you know, we do this? Oh,

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that timing was a little bit off, let's adjust it. So I'm sure there's multiple iterations to it.
Q. Do you know for any of the programs that reside on the 2040 System --
MS. SKLENAR: And we can go back to the prior exhibit with the screen shot of the monitor.
THE TECH: (Complying.)
MS. SKLENAR: Yes.
Q. For any of those programs that you think may have been done in your lab, do you know for any of them how long it took to input them into the 2040 System?
A. No. I don't specifically know, other than, you know, there is a cap on how much time it would have taken, because the whole project was -- I mean, I have the exact hours of how much time Kevin spent on the project.
Q. Have you personally -- personally, and I mean you -- have not programmed the 2040 System by inputting any sort of steps into the system yourself, correct?

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A. Actually, I have.
Q. And when did you do that?
A. I did it about a month ago.
Q. What program did you input?
A. I mean, I -- I went through and I edited some of these programs to just see what it takes to edit it, and it's actually quite easy.
Q. When you say you edited them, you mean you changed them?
A. Yes.
Q. And did you do that before the lawyers for Cytiva inspected the system?
A. I -- no. That was probably after.
Q. Do you know for certain whether it was before or after?
A. I did it in response to Dr. Wereley's comments that this took a really long time. And it's like, I don't remember it being a long time. I'm going to go look at it and see how long it takes. And it was like, yeah, he's just making stuff up.
Q. But you never entered a full program into the system; is that true?

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A. I've never put a full program in, no.
Q. So your testimony is just you've edited an exiting program, correct?
MR. DAMON: Objection to form.
A. Yes. My testimony is that I've -- the main -- I've never done a full program. I've played with it to see how difficult it was to do, and it was easy to change times. It's easy to change what's going on. It's easy to turn things on and off. It's actually quite trivial.
Q. You don't describe any of that in your reply expert report, efforts you took to edit programs, correct?
MR. DAMON: Objection to form.
A. I don't believe so.
Q. And can you tell me right now which of the programs you edited?
A. I specifically went in to look at chrom test2 to see how long it was, how -- what modules were specifically involved in the program. Yeah, so that's the one that I looked at.
Q. So is chrom test2 that resides on the

MR. DAMON: Objection; form.
A. If you want to do a custom liquid chromatography application, that's what everybody has to do.
Q. Well, I -- let's not talk about custom. Let's just talk about a routine liquid chromatography application.
MR. DAMON: Objection; form.
Q. Is it your opinion that somebody who wanted to do just a routine liquid chromatography application would have to go through all of the steps that Mr. -- Dr. Petersen and Mr. White went through for the 2040 System to do any sort of liquid chromatography?
MR. DAMON: Same objection.
A. They would essentially have to go through, yes, the -- the same steps. They would have to plan out what they are trying to do, what their chromatography experiment is. They'd have to plan out the -- you know, the time and the operations that they're going to use. They'd have to plan out what columns they want to use. They have to plan out

the -- you know, any data processing or any other things that they want to do.
There's no liquid chromatography system that I'm aware of that you take it out of the box, and it runs itself.
Q. And so for the purposes of the your opinion on that in terms of the efforts that are required to get a commercial liquid chromatography system to run, you're relying on your discussions with -- her name is Ms. Schaffer, is that correct, at Bio-Rad?
A. That's correct.
Q. And you don't cite any documents from Bio-Rad for purposes of that portion of your opinion, correct?
MR. DAMON: Objection; form.
A. If they're not there, then I don't cite them.
Q. Okay. So you haven't gone to look at any internal Bio-Rad documents that talk about the length of time in terms of setup required to run liquid chromatography on the NGC system, right?

A. I mean, all that I've looked at -- sorry. All that I've looked at is the NGC doc- -- you know, operating documents, and it's clear that it's not, you know, pull it out of the box and push the button, and it -- and it does chromatography. So --
Q. Can you cite me to the document you're referring to?
MR. DAMON: Can you let the witness finish, please?
A. The -- only to go back through, I know when I did my original reports back in 2015 that, you know, I looked at those documents, and it's clear that it's not, you know, just walk up, push a button, and -- you know, get it out of the box, push a button, and walk away.
Q. But you haven't looked to see how Bio-Rad markets its systems to customers and how -- how it touts that its systems are easy to use in terms of setup in running liquid chromatography, correct?
MR. DAMON: Objection; form.

A. So I talked to Ms. [redacted]
[redacted]
So the -- I mean, you look at what we did with the 2040 System, we had no technical support. We had no help. We had no -- we bar- -- barely had any documentation, and we were able to do it in a very reasonable amount of time.
MS. SKLENAR: I move to strike as nonresponsive.
Q. Dr. Gale, my question was did you look to see how Bio-Rad looks to market its system to customers and how it touts that its systems are easy

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to use in terms of setup? Did you look at marketing material?

MR. DAMON: Objection to form.

A. I did not specifically look at marketing material. I talked to Ms. Schaffer, and that's how she indicated that that's how it's -- it's known and -- and marketed, so...

Q. Now, when you talked to Ms. Schaffer,

[redacted]

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[redacted]

[redacted]

Q. And there are also some liquid chromatography programs that come with the ÄKTA systems, correct?

MR. DAMON: Objection; form.

A. You know, I don't specifically recall, but I would believe that.

Q[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Q. All right.

MR. DAMON: Counsel, we've been going for a little over 90 minutes. Think it's a good time for a break?

MS. SKLENAR: Yes, it would. Let's take a break for five.

MR. DAMON: Thank you.

THE VIDEOGRAPHER: The time is 2:05 p.m. We're going off the record.

(Recess taken.)

THE VIDEOGRAPHER: Stand by, please. The time is 2:13 p.m. Mountain Time. We're going back on the record.

BY MS. SKLENAR:

Q. Were there any experiments done on the 2040 System in terms of taking pH measurements?

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understand.
A. I'd say they're similar.
Q. And did you express to anyone at Bio-Rad that that was your view?
A. I've never been asked that question.
Q. So you've never discussed -- like, for example, with Ms. Schaffer, you've never talked to her about the 2040 System and explained to her what was involved in programming the 2040 System, correct?
MR. DAMON: Objection; form.
A. I don't specifically recall if we explained at all how the 2040 System worked. We were mostly asking how does the NGC system work. The user interface on the NGC system is probably more modern. It can be done on a computer. You can actually program the Applikon instrument on a computer as well, and I suspect that that would even make it even easier than what -- what we did.
Q. Dr. Gale, I have limited time left. So I'm going to ask you to try to stick with me and answer my questions.

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You've never talked to Ms. Schaffer about the 2040 System and explained to her what was involved in programming the 2040 System, correct?
MR. DAMON: Objection; form.
A. I don't recall. We -- we may have at a very high level, I mean like 20 seconds' worth or 30 seconds' worth of time saying this is how the 2040 System is used. And then talked about maybe how that compares. But it was -- I was most interested in how the NGC system worked.
Q. And you never showed her the test report that's Exhibit 4, correct, that describes the November 2016 experiments?
MR. DAMON: Objection; form.
A. I have never shown it to her. She may have seen it some other way, but I never showed it to her.
Q. And you never showed her the system interface for the 2040 System and walked her through the steps of what had to be done to program the 2040 System, correct?
MR. DAMON: Objection; form.

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A. I did walk through with her what we did to -- to use the 2040 System and asked if that's typical for an NGC system, and she said you basically have to do the same thing with an NGC system.
Q. So I just want to be clear. You said a minute ago that maybe 20 seconds' worth of time -- you talked about the 2040 System -- and now are you telling me you spent more than 20 or 30 seconds talking about the 2040 System with Ms. Schaffer?
A. Yeah, now that -- once you asked me that other question, I remembered that we did have a conversation where we explained for probably two minutes the general approach that we'd taken with the 2040 System. And then she basically responded that that was similar to the steps that you'd need to take for the NGC system.
Q. And -- and so you're suddenly remembering a lengthier conversation with Ms. Schaffer; is that right?
MR. DAMON: Objection; form.
A. Yeah, I mean, I don't remember all the details of the conversation, but I do remember

Page 300

that we explained to her here is the general approach, here is how we use the Applikon instrument, and, you know, what's different between how you do that and what you do with an NGC system.
Q. So Ms. Schaffer, if I -- if we took her deposition would say, "I absolutely walked through and compared for the 2040 System and the NGC system the steps and length of time that it would take to operate each to do liquid chromatography. That's exactly the conversation we had"?
MR. DAMON: Objection; form.
A. We did not specifically say, you know, here's how much time it took to do X, Y, or Z. We talked about here's the -- the steps that you have to take to set up the Applikon instrument. How is that different from the steps you have to take to set up the NGC system. And I'm sure she would agree that we had that conversation.
Q. Okay. Well, we'll see.
So have you ever done -- I asked you about Karl Fischer titration. Have you ever done endpoint titration?

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You discuss a number of license agreements in your rebuttal report, correct?
A. I do.
Q. Okay. And you say you --
MS. SKLENAR: Let's turn to Paragraph 314.
THE TECH: (Complying.)
Q. And you refer to four factors that you evaluated, right?
A. Yes.
Q. And where did you get those factors?
A. I believe those factors were, I mean, things that were readily apparent to me that you'd want to compare. I was trying to remember if there was some legal thing that the -- Bio-Rad's counsel pointed out to me that should be considered, but those were things that I considered that would be important, I guess.
Q. So you don't know where those factors came from, if they came from Bio-Rad's counsel or if you came up with them, right?
A. Well, that's not what I said. These

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are -- these are things that I thought of or that -- some of these were things -- clearly some of them were things that I thought of and I'm not sure if they were some additional ones that said, oh, you should also include this. So I -- I don't recall.
Q. You then reference that you reviewed evidence regarding all of the license agreements that you understand Dr. Kearl is relying on, that's in Paragraph 317?
A. Yes.
Q. Okay. So you reviewed evidence regarding all of the license agreements that Dr. Kearl is relying on, that's what you say, right?
A. I mean, I looked at -- I don't know exactly all the documents that Dr. Kearl is relying on, but I had documents that were produced for me that, I guess, I was asked to review. So that was my understanding, is that these were what Dr. Kearl was using.
Q. You then summarize information relating to [redacted] licenses, right?
A. I believe that's correct, that I

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focused on two.
Q. Did someone provide you with a copy of those licenses?
A. I believe so.
Q. Who?
A. Bio-Rad, the counsel.
Q. Did you discuss either of those with Dr. Kearl?
A. I did.
Q. Do you note your discussion in here?
A. I mean, the discussion with Dr. Kearl, he -- he asked me some questions about these licenses.
Q. But you don't note that in here; is that right?
A. No, I --
MR. DAMON: Objection; form.
A. I don't recall what if I -- sorry I'm -- I don't do this all the time. I'm not sure if I'm supposed to note that or not, so I may have missed that.
Q. Did you review any other license

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agreements produced by Bio-Rad and Cytiva other than the [redacted] you've summarized?
A. Actually, I think there were like six or eight or some number of license agreements. I don't remember specifically. They were -- there were more than two.
Q. You don't summarize any agreements other than [redacted], correct?
A. That's correct.
Q [redacted]

CERTIFICATE OF SHORTHAND REPORTER-NOTARY PUBLIC

I, Amanda Gorrono, the officer before whom the foregoing depositions were taken, do hereby certify that the foregoing transcript is a true and correct record of the testimony given; that said testimony was taken by me stenographically and thereafter reduced to typewriting under my direction; and that I am neither counsel for, related to, nor employed by any of the parties to this case and have no interest, financial or otherwise, in its outcome.

IN WITNESS WHEREOF, I have hereunto set my hand this 25th day of November, 2020.

AMANDA GORRONO, CLR

CLR NO: 052005 - 01

Notary Public in and for the State of New York
County of Suffolk
My Commission No. 01G06041701
Expires: 01/07/2023

EXHIBIT 2

FILED UNDER SEAL

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CYTIVA SWEDEN AB, and GLOBAL LIFE SCIENCES SOLUTIONS USA LLC, Plaintiffs v. BIO-RAD LABORATORIES, INC., Defendant.	C.A. No. 18-1899-CFC Consolidated **DEMAND FOR JURY TRIAL** **HIGHLY CONFIDENTIAL (TECHNICAL) – ATTORNEYS' EYES ONLY**

REBUTTAL EXPERT REPORT OF DR. BRUCE GALE

handling unit"	removed from positions in the housing and that has a standardized size and shape that allows it to be exchanged with another fluid handling unit"
Claim Preambles ("An automated liquid chromatography system comprising" / "A method of modifying a fluid flow path in an automated liquid chromatography system comprising" / "A method for building an automated liquid chromatography system, the method comprising"/ "A liquid chromatography system arranged to provide a controlled fluid flow through a chromatography column, the system comprising")	The preambles are claim limitations.
"liquid chromatography system"	Plain and ordinary meaning
"automated liquid chromatography system"	Plain and ordinary meaning
"wherein the system is capable of performing automated liquid chromatography"	Plain and ordinary meaning
"non-fluidics section" / "non-fluidics section" / "non fluidics section"	"a section of the interchangeable fluid handling unit that includes electrical components and does not include fluidics components"
"a fluid handling section" / "a fluidics section"	"a section of the interchangeable fluid handling unit that includes fluidics components and does not include non-fluidics components"

23. In all cases, I applied the agreed claim constructions or the Court's constructions as one of ordinary skill in the art would interpret them in light of the specification and the file history in performing my analyses and rendering my opinions in this report.

24. In this regard, it is my opinion that Dr. Wereley has misconstrued the Court's claim construction at least with respect to the terms fluidics section and non-fluidics section in Paragraphs 57-58 of his report. He has done so, apparently, because he did not state in his opening report that he reviewed the file history where the inventors of the asserted patents made certain statements explaining what their inventions were not. By failing to review those statements, Dr. Wereley interprets the Court's claim construction (and statements made during

42. Moreover, when one of ordinary skill in the art performs an analysis of the patent, the statements the inventors made to obtain their patents, and the actual modules that have been accused, they would only be able to come to the conclusion that there is no external fluidics section in the two pump and one injection valve module that Dr. Wereley has relied on to prove infringement of this element.

43. Throughout the specification of the asserted patents, the inventors stress that there needs to be separation of fluidics and electronics components to ensure that electronics are not harmed when changing fluid connections and when a leak occurs. *See, e.g.*, Col. 2: 28-32 (a liquid handling panel to separate fluidics and electronics); Col 6: 17-620(in one embodiment, the panel member essentially separates the fluidics section from the electronics and internal electronics); Col. 6: 10-29 (noting various arrangements, including with and without a panel member such that the electronics are separated from the fluidics through the use of such components as a suitable sealing arrangement between the housing opening and the external fluidics side of the module); Col. 7:7-25 (noting air tight sealing between the component positions and the non fluidics section and noting configurations, such as that claimed, where fluids are strictly on one side of the fluid handling panel and the electronics are strictly on the other: "According to one embodiment, fluids are strictly restricted to the fluidics section 30 of the interchangeable modular components 26, but in alternative embodiments , only fluid connections are restricted to the fluidics section 30 allowing fluid to "cross" the fluid handling panel inside the non-fluidics section 30 of the interchangeable modular component 26.")

44. I note that nowhere in the patent is there a description of anything other than two sections in a module, a fluidics section and a non-fluidics section. To the extent there is some other intermediate section, it is nowhere described in the patents or how to determine it.

Nonetheless, even if one of skill in the art were to assume that such a section could exist, they would recognize that such a section would need to satisfy the goals of the invention, which is to keep the fluids separate from the electronics. Dr. Wereley never considered this requirement, which is present not only in the passages cited above, but also by the named inventor Mr. Lundkvist, Cytiva's previous expert, Dr. Scandella, and statements that the inventors made during prosecution to obtain the patents.

45. For example, the named inventor Mr. Lundkvist testified: "If it can get liquid on the electrical component, it will not be our concept. . . So –in our concept it, has to be separated with a sealing, those two parts – the liquid and the electrical stuff.". Ex. 2, 10/17/14 Dep at 141:14-19.

46.

And it was important to separate the fluidic section from the electrical components, such as circuit boards, because the front side where they have the flow path, the -- customer handled it with the finger -- finger tights -- when you screw it in, the valve, for example?

When you have the customer not have mounted it in the proper way, they can maybe get loose and spraying all around with the liquid?

And it's important to protect that leakage so it won't go in the electrical circuit board, so -- the electrical component.

47. Ex. 2, 10/17/2014 Lundkvis Dep. At 140:6-25.

48.

Q. So it would not be your concept if you had electrical components on the front within the flow path?
A. If it can get liquid on the electrical component, it will not be our concept.
Q. Okay.
A. So -- in our concept it, has to be separated with a sealing, those two parts -- the liquid and the electrical stuff.

49. Ex. 2, 10/17/2014 Lundkvis Dep at 141:11-19.

50.

Q. So you can't -- based on what you said before, you don't want -- also based on what your patent says -- you say that the electrical components -- the circuit boards, the motors, the pH sensor, the UV sensor --
A. Yeah.

LUNDKVIS

Q. -- all need to be inside the housing in that non-fluidic section, right?
A. I'm referring to the concept again. It's just important to separate those with a sealing? And if it's outside or inside, it doesn't matter for the concept. Yes, if it's sealed off, that's very important, so it won't -- they won't interfere -- the liquid won't interfere -- let it come down to the electric circuit board.

51. Ex. 2, 10/17/2014 Lundkvis Dep at 144:20 – 145:12.

52. In fact, Mr. Lundkvist testified that the separation was so important and central to his invention that he did not consider a system in which the fluidics and electronics were not

separated as something that he had invented. Ex. 23, 06/26/2020 Lundkvis Dep at 151:24-155:15

53.

Is fair to say that if a system does not require the fluidic components to be separated from the electrical components, is it fair to say that such a system is not what you consider to be your idea or your invention?

MR. NISHIMOTO: Objection, form.

A. Yes, my idea was to have a -- a wall to separate these, the fluidics, from the electronics, yes.

54. Ex. 23, 06/26/2020 Lundkvis Dep at 151:24-155:15 (only 155:6-15 reproduced here).

55. Plaintiffs' first expert similarly identified the importance of the separation of electronics and fluidics to the invention at pages 54-56 of his deposition reproduced below:

saw.

Q What's the purpose of this invention, as you understand it, that's described in the '718 patent? 10:39:56

A Well, as I see it, this invention allows the user to have greater flexibility in terms of how he uses his -- his fluidics handling system, and in terms of the different types of applications that can be used, and in terms of easily reconfiguring the system to accommodate new uses and possibly new environments where the machine is used. 10:40:12

Q What's the reason for separating the fluidics sections from the electrical components? 10:40:34

Page 54

A Well, one reason is to protect the electrical components. The electrical components typically are sensitive and easily damaged by contact with -- with fluids, particularly the kinds of fluids that are used in the fluidics section. 10:40:53

Q Any other reason?

A Probably other reasons. One -- one reason is to make it easier to contain it, to control the environment of the electronics components. 10:41:10

Q Anything else?

A There -- if you let me think for a minute, I could come up with some more.

Q Go ahead.

A But those are -- 10:41:24

Q Go ahead and think.

A Well, another is that in a laboratory environment, one is -- solutions are constantly getting splashed around when they don't -- when you don't intend them to be. A piece of tubing breaks or pops off of a fitting, or a beaker tips over and you end up with -- with salt solution splashed on the front of your instrument. These are the kinds of things that happen in the lab, and that an instrument -- instrument such as these automated 10:41:35 10:41:52

Page 55

56.

57. 1 liquid handling systems, you'd like them to be able
2 to cope with that. EX.

58. Over and over again during the prosecution of the applications that lead to the patents and in order to distinguish their invention over the prior art, the inventors relied on and pointed to the same need for separation of fluidics and electronics in their invention to ensure that the electronics would not become wet and therefore likely damaged. For example, when addressing and distinguishing the Mourtada reference from their invention, the inventors stated: "The reason for separating the fluidic and non-fluidic sections is to stop the non fluidic sections getting wet when pipes etc. are reconfigured on the machine, and/or when the modular components are rearranged. None of those features are disclosed in or obvious from Mourtada … The apparatus as proposed in claim 1 thus provides the unexpected advantage that not only can component positions be reconfigured easily and thereby simplify the fluidic interconnection of the components used, but alternatively, fluidic reconfiguration can be carried out without precious electrical pars becoming wet or contaminated. This is particularly advantageous where toxic or corrosive, or pathogenic liquids are being handled. On the one hand the organisation of the components can be optimised, and they can be protected in use. These advantages are not present in Mourtada or any prior art cited." Ex. G at GEHC 001477- 1478. (emphasis added)

59. With respect to the Bergstrom prior art the inventors were distinguishing they stated: "Applicants submit that Bergstrom has given no thought to what happens when one unplugs a module and gets the electrical contacts 19 wet which will be inevitable since the contacts 19 appear to be housed in the cup shaped aperture 14, or what happens to the processor 55 in Figure 10 when that gets wet. *Id.* at GEHC 001451.

60. The inventors said the separation requirement was even more important in liquid chromatography systems as opposed to other automated fluid handling systems: "The features of claim 17 as applied to liquid chromatography are particularly advantageous because such a system is typically used for many different initial experiments to prove the principles for larger scale operations. In such use, the system components are frequently reconfigured and in so doing the advantages of fluid and non-fluid separation, as claimed in claim 17 become even more significant, for example by providing a housing for liquid chromatography components including a liquid handling panel for accepting the components and avoiding contamination of electrical components." Ex. G at GEHC 001418.

61. To ensure that the goals of the invention were met, the inventors described in great detail during the prosecution when they were distinguishing the prior art what was necessary to separate the fluidics from the non-fluidics sections and what would not be considered separation – something that still had a likelihood of the electronic components of a module becoming wet when fluid connections were changed, modules were rearranged, or a leak occurred. If that was possible, then one of skill in the art would recognize that the fluidics and the non fluidics (electronics) were not in distinct sections that were separated. Rather they would be in the same section.

62. And as will be explained in more detail in the following paragraphs that is what is present in the Bio-Rad accused modules. One of ordinary skill in the art reading the file history would only be able to come to the conclusion that the external electronics that Dr. Wereley recognizes are present in the accused Bio-Rad modules (the two pumps and injection valve, Wereley ¶ 116) are not in sections that are distinct from the fluidics sections. Rather, they are in the same section and not separated in the manner the inventors said they needed to be to be part

of the invention and distinct from the prior art. For example, the accused pump module has switches, a display, and LED lights which the user sees, as well as a PCB and ribbon electrical connector in the overlay. *See e.g.*, Wereley ¶ 142, showing pictures of accused pumps in Ex. 48, 49 and ¶ 150 quoting from manual Ex. 47 stating that there are switches on the exterior of the pump modules. *See also* Ex. 25.

63. In particular, the inventors pointed out that for there to be separation of the electrical components and the fluidic components of a module such that they were in separate sections and unlikely to have fouling/wetting or contamination of the electrical components if there was a leak of the fluidic components, there had to be a particular spatial relationship between the components.

64. In particular, the inventors said multiple times that the fluidics and the electronic components of a module need to be on opposite sides of a panel for a) them to be separated, b)to ensure that the electronics would not get wet if there was a leak, and c) to define the electronics and the fluidics as being in separate sections. In discussing Bergstrom, the inventors said: "The modules of Bergstrom do not separate their fluidic and electrical parts (where they have electrical parts). Further, those paths cross into the base plate at about the same region. The detector module 10 of Figure 10 illustrates that fluid and electrical parts are adjacent, **not on either side of a panel.** Ex. G at GEHC 001451.

65. After stating that Bergstrom gives no thought to making sure that electrical parts do not get wet, which I cited to above, the inventors then reemphasize, one paragraph later, the separation point and again state that the fluidic and electronic parts need to be on opposite sides of a panel in the invention. In fact they not only state that the electronic parts in a modules need to be on opposite sides of one panel, but on opposite sides of two different panels : "These

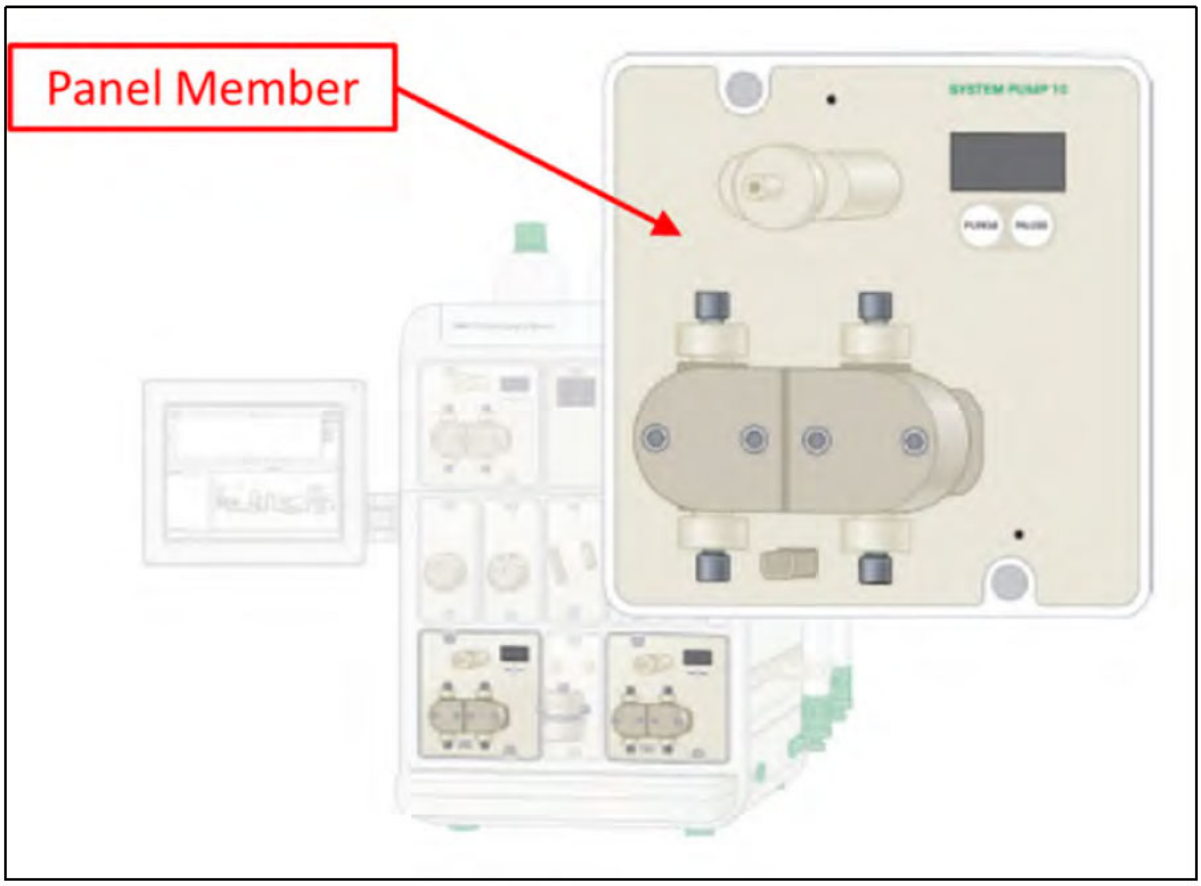
problems in the Bergstrom design are not addressed in Burger, but are cleverly addressed in presently claimed invention **by separating** the fluidic and non fluidic parts of fluid handling units **across a fluid handling panel** and **across a panel member of the modular components**, **which inhibits the problems mentioned immediately above**." *Id.*

66. The accused modules do not meet those requirements for multiple reasons and therefore do not have external fluidics sections, ones that do not have electrical components, for multiple reasons.

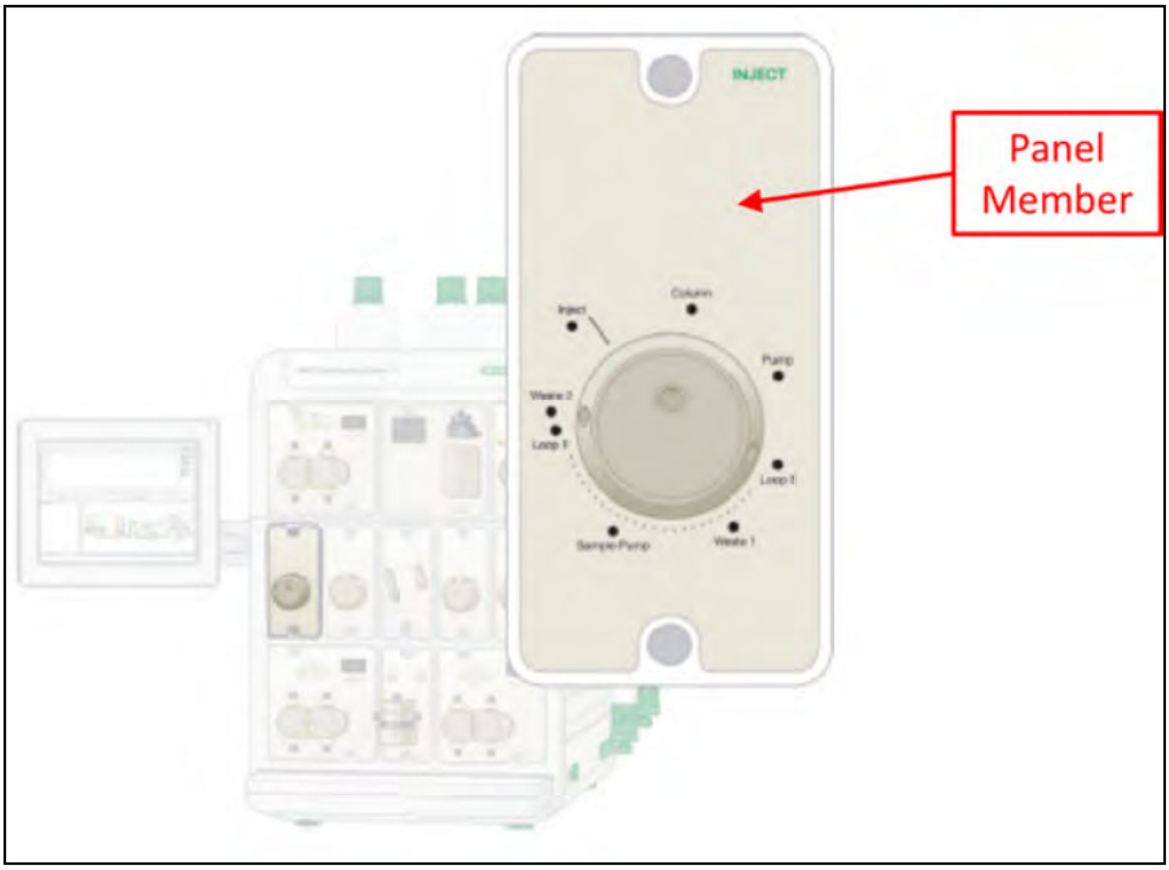
67. First, having failed to refer to any of the File History statements which require the fluidics components of a module to be separated from the electrical components by at least two different panels to be considered by one of ordinary skill in the art to have distinct fluidics and electronics sections, Dr. Wereley provides no detailed analysis of the alleged panel member of the modules that are supposed to separate fluidics from electronics components of a module to meet the requirement that the electronics and fluidics are in separate sections.

68. Dr. Wereley purports to analyze the panel member as claim element 1(h) at paragraphs 138- 147. But the analysis is cursory and conclusory again. At paragraphs 139 and 141, Dr. Wereley pastes pictures of a Bio-Rad system pump and a sample inject valve and simply draws a red arrow and red box and concludes these are the panel members of the modules. I reproduce those figures below:

69.



70.



71. At paragraph 145, Dr. Wereley cites to testimony from two Bio-Rad witnesses to establish that what he has pointed to is a panel member. But, the testimony does not do so. Both Mr. Bland, and Mr. Chapman, whose testimony is quoted, state that the component that Dr. Wereley points to as the panel member is actually two separate parts: there is 1) "a front plate" and an "overlay" *Id.* at ¶ 145. Mr. Chapman testified that [redacted] *Id.* at p. 91 (quoting Chapman testimony).

72. In other words, Mr. Chapman's testimony makes clear that the faceplate is what is responsible for allowing the module to be mounted on the instrument housing. I have confirmed this by holding and physically examining a number of the Bio-Rad modules. The specification of the asserted patents describes the panel member as the structure that is used to attach the module to a component position in the in the liquid handling panel. *See e.g.*, '420 patent Col. 6:30-34 ("As is disclosed in FIGS. 4a to 4d, the interchangeable modular components 26 comprises a panel member arranged to separate the fluidics section from the non fluidics section and for attachment to a component position in the liquid handling panel.")

73. The first problem with Dr. Wereley's analysis is that he equates two distinct parts, the face plate and the overlay and calls them collectively the panel member. *See* Wereley at ¶ 146, referring to the "face plate/overly structure" The assembly drawing from one exemplary module, [redacted]

74. 

Ex. 6, BRGE00000582.

75. [redacted]

76. [redacted] One can see from the figure that the overlay is full of electronics. There is a printed circuit board which appears brown or copper colored. There is a ribbon wire connector, and there are LED lights shown on this module. Other modules also have a display that the user can see as well as switches for the user to activate. The

LED lights, the display and the switches are not trivial elements added to avoid infringement as I understand plaintiff's counsel portrays them. Rather the LED lights tell a user where to make fluidic connections and the display enables users to easily see values and parameters on the modules. [redacted] Even Plaintiffs' witnesses Mr. Soderman testified that the LEDs are useful Ex. 26, 115-116 ("Q: What do you think about those small LED lamps? A. Good to have for a beginner.") and Bio-Ra employees have pointed out that it is a feature which users like and appreciate. Ex. 27, Chapman Depo Tr. at 206:21-207:13.

77. In any event, given that the overlay and faceplate are two separate structures held together by a few drops of glue, one of ordinary skill in the art would not consider them collectively the panel member.

78. But, even if one of ordinary skill in the art reading the specification considered the overlay and faceplate to be the panel member, they would not consider the electronics that are part of the overlay to be in a separate section of the module from the fluidics section as Dr. Wereley concludes with no analysis. At paragraph 149 of his report, Dr. Wereley merely says: "I see no reason why the fact that certain of the modules have LEDs or displays integrated into their panel members takes them outside the scope of the claim language. For one, as discussed, the fact that these are non-fluidics components is not relevant since under the Court's claim construction, only the fluidics section cannot have non-fluidics components such as electronics, and the panel member is a different section in that it is neither a 'fluidics section' nor a 'non-fluidics section'."

79. Dr. Wereley makes the statement that he does not see any reason why the electronics "integrated into the panel members takes them outside the scope of the claim language without analyzing the file history to see how the inventors characterized their invention and how they treated what is a fluidics section. When the file history is examined, one of ordinary skill in the art can only come to the conclusion that what Dr. Wereley points to as a panel member and a fluidics section of the accused modules do not satisfy the requirements of the claims and are not consistent with how the inventors characterized their invention or the fluidics section in the file history. As a result, Dr. Wereley's opening report fails to meet Plaintiffs' burden of establishing the existence of this element in the accused modules.

80. Dr. Wereley merely concludes with absolutely no analysis that anything "integrated into the panel member" is a different section from the fluidics and electronics sections. I do not agree and neither would one of ordinary skill in the art who read the specification and the file history.

81. First, the inventors addressed this very issue in the file history. With respect to fluidics and electronics and the existence of separate sections, the inventors stated that the fluidics and the electronics need to be on either side of a panel. *See* Ex. G GEHC 001451 (The detector module 10 of Figure 10 illustrates that the fluid and electrical parts are adjacent, **not on either side of a panel"**) (emphasis added); ("Bergstrom has given no thought to what happens when one unplugs a module and gets the electrical contacts 19 wet which will be inevitable since the contacts 19 appear to be housed in the cup shaped aperture 14… These problems in the Bergstrom design are not addressed in Burger, but are cleverly addressed in presently claimed invention **by separating the fluidic and non-fluidic parts of fluid handling units** across **a**

fluid handling panel and across **a panel member of the modular components**, which inhibits the problems mentioned immediately above.")(emphasis added)

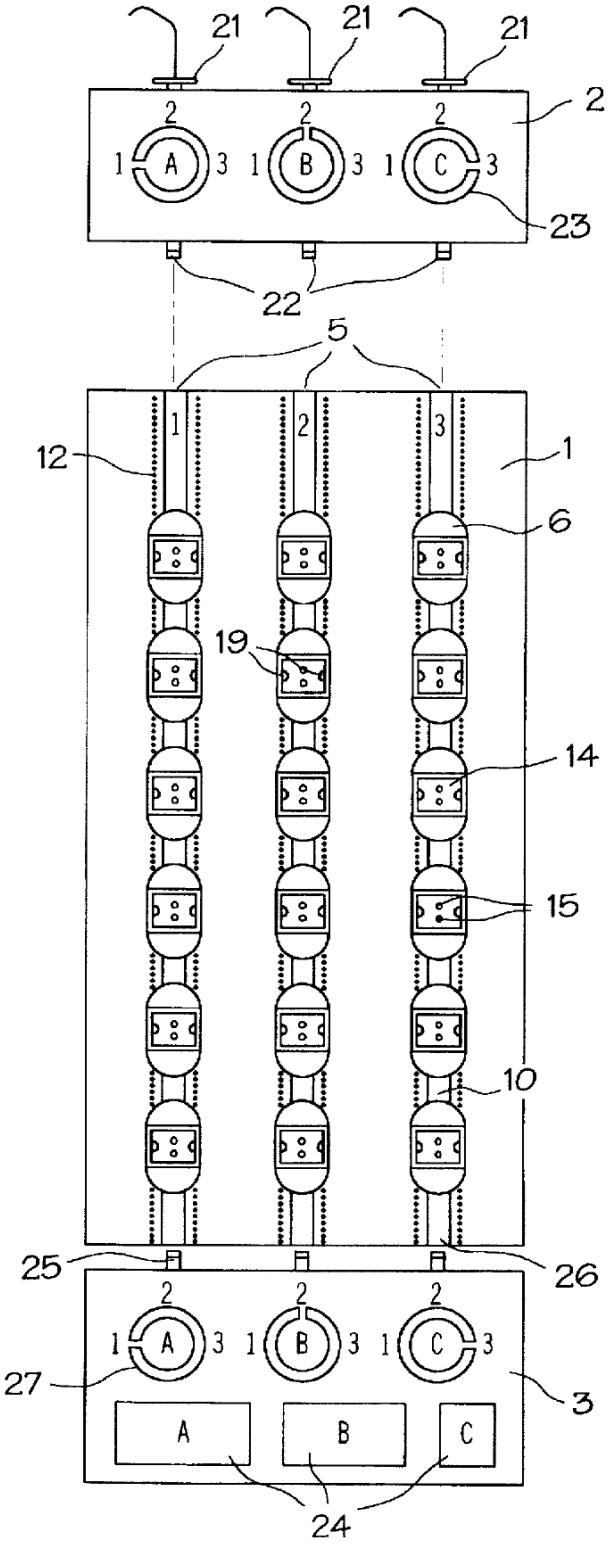
82. The first quote from the inventors in the above paragraph shows that they consider the panel member, which like all physical objects has a thickness, has two sides, (*i.e.* "either sided"). It is apparent Dr. Wereley did not consider this fact. If he did, Dr. Wereley could not make the accused panel member consistent with the inventor statements by claiming that rather than two sides, the panel member has four sides: 1) the side the user sees, 2) the inner side of that side in the thickness of the panel, 3) the side that is mounted against the housing, 4) the inner side of that side which is also in the thickness of the panel. In standard English usage, which does not differ from the way one of ordinary skill in the art would understand what the inventors said, "either" indicates two options.

83. The same conclusion would be reached by one of skill in the art reading the second quote from Ex. G at page GEHC 1451 that I quoted above that the inventors made regarding the arrangement of the fluidics and electronics of a module. In the second quote, again distinguishing Bergstrom, the inventors stated that the fluidics must sit "**across**" two different panels: 1) the fluid handling panel and 2) the panel member. The accused products satisfy neither of these requirements and would not be considered by one of ordinary skill in the art to therefore contain a fluidics section with no electronics in the section.

84. As with the word "**either**" in the first quote, one of ordinary skill in the art would understand the use of the word "**across**" with reference to the fluidics and electronics of a panel being across two different panels to refer to the panel having two sides and the electronics and fluidics of a module lying on the opposite sides. That is not the case with the accused modules

85. According to Dr. Wereley, the electronics are "embedded" in the panel member and thus part of a separate section from the fluidics. In addition to the fact that this embedded notion is inconsistent with the two statements I quoted above stating that the fluidics and electronics should be on either side of the panel member and across two different panels, the liquid handling panel, which the electronics and fluidics in the accused modules surely are not, and the panel member which they also are not – it is also inconsistent with other statements and the physical arrangements of the components in the Bergstrom reference that the inventors distinguished.

86. In the file history, the inventors stated that one can see how Bergstrom arranged his components in Figs. 1 and 4(a) where you can see a flow line 5 in baseplate 1. Ex. G at GEHC 1449. I reproduce those figures and others from Bergstrom (Ex. 21) below.


21
21
21
2
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2
2
1
A
3
1
B
3
1
C
3
23
22
5
1
2
3
12
1
6
19
14
15
10
25
26
2
2
2
1
A
3
1
B
3
1
C
3
27
3
A
B
C
24

FIG. 1

87.

88. The inventors repeatedly described the flow line "5" as being adjacent to the electrical connectors "12" and therefore, having fluidics which are not separated from the electronics in the base plate "1" which had been equated to the panel member. Ex. G, GEHC at 1449-1451.

89. Dr. Wereley's claim that electronics integrated in the thickness of the panel member are in a separate section and separated from the fluidics section of the module is inconsistent with what the inventors said about Bergstrom. As can be seen in Figure 4(a), which I reproduce below and which the inventors referenced when distinguishing Bergstrom as not having separate fluidics and electronics sections that were separated, the electronics lines "12" in Bergstrom are integrated in the base plate/panel member and are distanced from the fluid lines "5" which are also embedded in the base plate.

90. In Fig. 4(a) one sees a blow up of a single module "10" in base plate "1". One can see in the figure that the flow line "5" is within the thickness of the base plate

91. This is also shown in Fig. 2 which I also reproduce below.

92. as

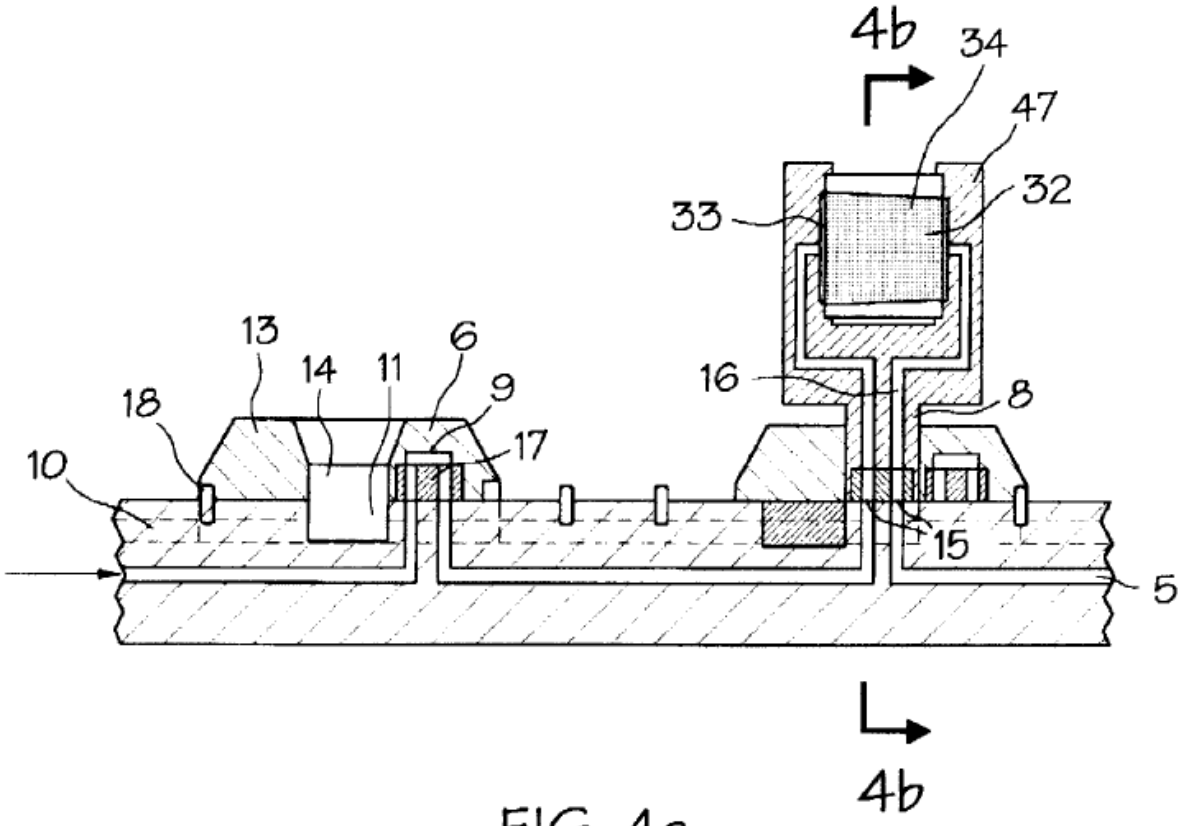

FIG. 4a

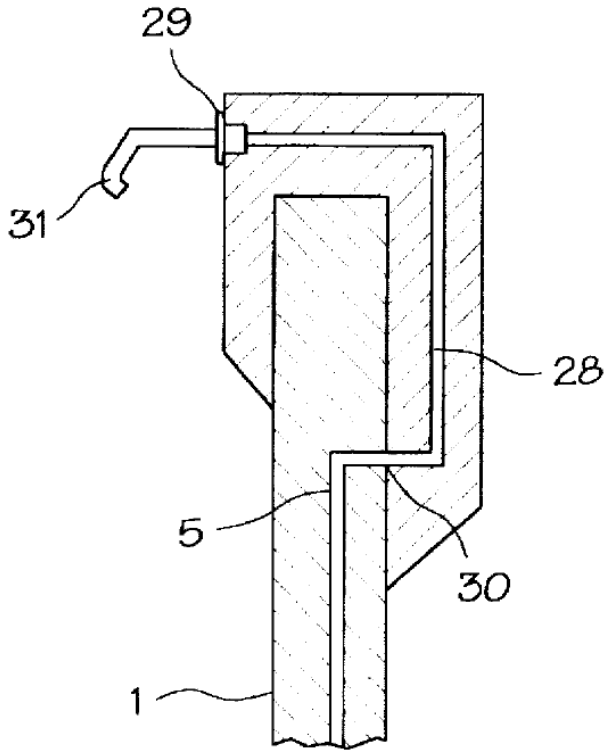

FIG. 2

93.

94. Similarly, the Bergstrom specification states that the electrical lines "12" which are depicted in Fig. 1, are also embedded in baseplate 1. *See* Ex. 21 Bergstrom 5,766,460 at Col. 3:50-54 (One or more lines/conductors (**12**) for signal and power transmissions from or to connected modules may be arranged in the base plate (**1**) preferably along the flow lines (**5**).". Nonetheless, even though the electronics were integrated in the thickness of the baseplate/panel member and so too were the fluid lines (5). Although those lines were parallel or near each other, they would have to be embedded in different thickness of the baseplate/panel member. But, consistent with the prior statements of the inventors that the fluids and electronics in a module had to be on different sides of two different panels, the inventors did not consider Bergstrom to have modules with separate fluid and electronics sections or have those sections separated.

95. Consequently, Dr. Wereley's analysis that having electronics integrated in the thickness of the panel member creates a different section that is separated from the fluidics section, is not consistent with the file history and one of ordinary skill would not come to the same conclusion that Dr. Wereley did. Rather, after reading the portions of the file history I have discussed thus far, one of ordinary skill in the art would conclude that the accused modules do not have an external fluidics section—one that has no electrical components.

96. Dr. Wereley's analysis that integrated electronics are a separate section from the fluidics does not consider at all that such an analysis fails to account for the accused devices and the analysis regarding them being inconsistent with the purpose of the invention. As I detailed previously, the patent, the inventor and plaintiff's prior experts also stressed that the purpose of the invention was to have electronics and fluidics in distinct sections that are separated and sealed from each other so as to keep the fluids from wetting or damaging the electronics such as when fluid connections are being changed or if there is a leak. That is not the case in the accused devices.

97. As I explained above and as can been seen in the photo of the assembly procedure for the inject valve that I reproduced in this report, the overlay attaches to the face plate only with a few drops of glue. That method of attachment is not sufficient to seal the electronics which Dr. Wereley says are "integrated " in the "panel member" from fluids on the module. To confirm this, I physically examined at least two different modules recently, a pump module and a pH module with respect to the relationship between the overlay and the faceplate. I confirmed by looking at these physical samples that fluid that leaks from the modules would not be sealed from the electronics Dr. Wereley describes as being integrated in the panel member.

98. To be sure of this, I also spoke to Bio-Rad employee Joe Hilario. I understand that Mr. Hilario has experience with and responsibility for assembly of Bio-Rad modules and is familiar through his experience with whether fluid can seep into and wet the electronics that Dr. Wereley states are integrated in the panel member. Mr. Hilario confirmed, consistent with my examination of the modules, that in fact leaking fluid can wet the electronics that Dr. Wereley describes as being embedded in the panel member. My examination and Mr. Hilario confirmed that there is no sealing member, like a gasket, that seals the overlay to the faceplate and prevents electronics from getting wet. Consistent with this fact, The Bio-Rad products do not carry the same classification specified by a certifying organization as the Cytiva products, with respect to the degree that electronics and fluidics are separated from each other.

99. Consequently, the actual facts related to the accused modules demonstrate that they are not consistent with the purpose of the invention, to separate the fluids in a module from the electronics and therefore, have them in separate sections where the likelihood of the electronics getting wet is low. This fact also demonstrates that Dr. Wereley's conclusion that electronics "embedded in the panel member" as Dr. Wereley describes them, are not in a different section from the fluidics. For one of ordinary skill in the art to determine that fluids and electronics are in separate sections, they should be arranged and separated in such a way that the purpose of the invention will be fulfilled—electronics will not get wet if there is a fluid leak.

100. Yet another set of representations in the file history from the inventors that are inconsistent with Dr. Wereley's summary conclusion that electronics integrated in the panel

member[4] of the accused modules are in a separate section from the fluidics are the representations about the Hess reference.

101. The applicants distinguished the Hess reference as not having a fluidics section separated from a non fluidics section because the modules in Hess had an electrical connection coming out of the back of a module while there were fluids on the front of the module. *See* Ex. G at 1416-1417 ("Therefore, the boxes of Hess must be electrically interconnected, and it follows that these connections are external to said boxes and not internal to any housing…This means that the bus connections cannot be internal to said boxes or internal to any 'housing.' On the contrary, the bus connections must be external to said boxes to make sense of the description. Therefore, in Hess, respective non fluidics sections are not internal to any housing as claimed.").

102. The inventors recognized that Hess had an internal electronics sections that was separated and sealed from the fluidics section: *See* Ex. G at 1423 ("Since the Hess design was conceived with radioactive product processing in mind [e.g. see abstract] the need for sealing each box and electrically connecting each box such that liquid radioactive contamination does not penetrate the boxes or box electrical interconnections is very important, but results in a costly system.").

103. Nonetheless, the inventors stated that Hess was inconsistent with the invention because although it had electronics inside a housing that was separated and sealed from fluidics, there was one electrical component, a bus interconnection that was external and not internal to said housing in Hess. *See, e.g.*, Ex. G at 1424 ("Therefore, the boxes of Hess must be

[4] I am simply repeating Dr. Wereley's description of the arrangement but not agreeing with it.

electrically interconnected, and it follows that these connections are external to said boxes and not internal to any 'housing'."). According to the inventors, the electrical connections had to be at the back of the boxes. *Id*. at 1416 ("So by process of elimination, bus connections [in Hess] have to be at the back of the boxes – there is no other place for them if the boxes are stackable and fit side by side as illustrated.").

104. Below, I have reproduced an exemplary figure from the Hess reference (Ex. 22). In Fig. 2 below one of ordinary skill in the art can see that the system has fluid components on the front of the boxes, while the bus connections that the inventors described are on the opposite side and cannot be seen.

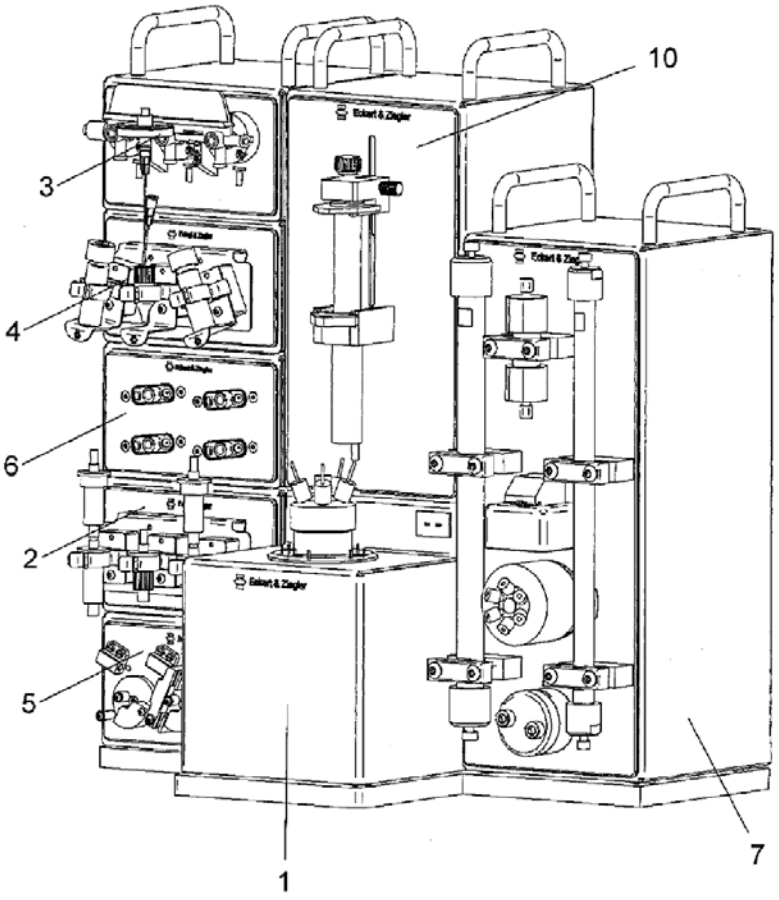

Fig. 2

105.

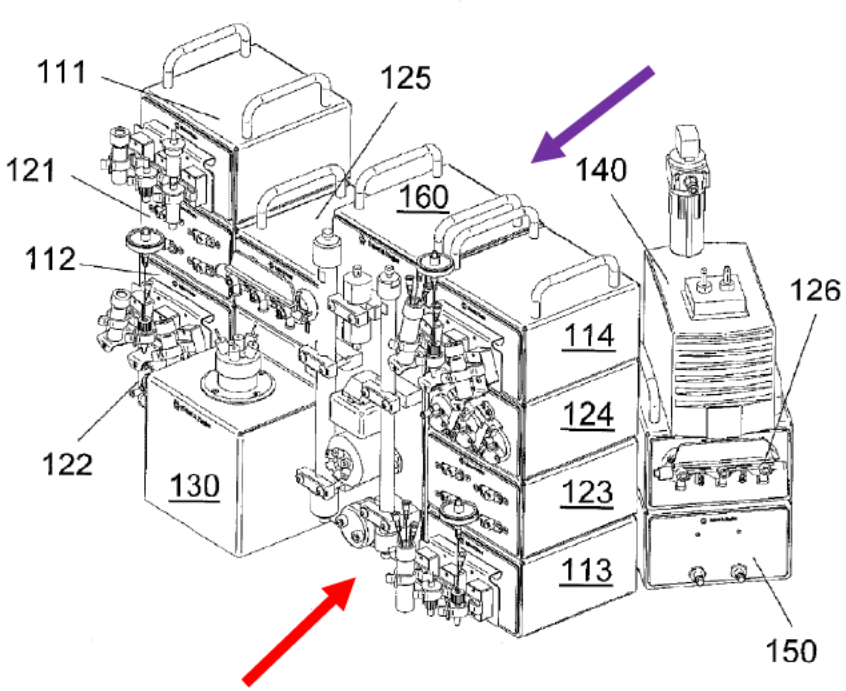

Fig. 4

106.

107. In this arrangement, one of ordinary skill in the art would see the bus connections at the back of the boxes, purple arrow, would be on the other side of at least two walls from the fluidics, which are indicated with a red arrow. Even with this two wall separation, the inventors said the arrangement was inconsistent with their invention. There is no way to square this representation about Hess, with Dr. Wereley's claim that electronics integrated in the panel member are in a separate section from the fluidics in the accused modules. The electronics in Hess are on the other side of two walls from the fluidics, not right next to them as in the accused modules, yet the inventors said this was not separation and not its invention because there was a single electrical component that was not inside the housing even though there were many other electrical components inside the housing.

108. The inventors further stressed why this type of arrangement was not its invention. Not only did the inventors consider that their invention had to have the fluidic and electronic

components of a module separated, such that there were distinct and separate fluidics and electronics sections in the module, but the separation had to be accomplished in a particular way which is inconsistent with Dr. Wereley's analysis.

109. Even if one of ordinary skill in the art would assume, contrary to the facts, that electronics integrated in the panel member of the accused products somehow separated them from the fluidics in the modules and protected them from getting wet, this is not consistent with the invention as the inventors represented it to the Examiner. The inventors unequivocally stated, over and over again, that any protection of electronics of a module had to consist of "collective" protection in which one module's electronics were being protected in the same way and in the same structure as all the other modules' electronics.

110. The inventors described the collective protection of the electronics of a module of the invention as follows in distinguishing it from Hess in Ex. G at 1414-1415:

> According to the claimed invention, the liquid handling panel of the housing, together with the panel members of the modular components is arranged to separate the fluidics sections with respect to the non fluidics sections of the modular components such that the respective fluidics sections are external to the housing and the respective non

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111.

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fluidics sections are internal to the housing. In general terms, as pointed out in the present application [0060], this concept allows for collective liquid protection of internal parts of the modular components present inside the housing and separated from the fluidics sections by the fluid handling panel/members. In contrast, in the design of Hess, each independent module needs to be sealed and resistant to liquids in order to provide a safe working environment and to comply with relevant regulations for fluid handling systems.

Since the Hess design was conceived with radioactive product processing in mind [e.g. see abstract] the need for sealing each box and electrically connecting each box such that liquid radioactive contamination does not penetrate the boxes or electrical interconnections is very important, but results in a costly system. The presently claimed system provides a much lower cost alternative to the Hess design because the collective protection of the housing claimed negates the need for the individual sealed boxes of Hess.

Applicant submits also that there is no disclosure in Hess of the separation concept of the fluidic sections and the non fluidic sections as claimed in present claim 1 "such that said respective fluidics sections are external to the housing and said respective non fluidics sections are internal to the housing". In Hess, each individual box must be connected to the bus in some way, but nothing detailed is illustrated concerning any connection. In this regard, the most pertinent description in Hess appears to be [0077] and [0078]:

> *[0077] To further reduce the complexity of the configuration, the system may include an intelligent bus system which recognizes connected components. Advantageously, standard connecting cables can be employed which only differ by having different lengths.*

113. At best, (which I do not agree with) what Dr. Wereley describes as electronics integrated in the panel member to create a section distinct from the fluidics section would be an example of individual protection of fluidics from electronics in each module that the inventors distinguished their invention from over Hess. Such individual protection does not provide the "collective protection" that the inventors said was necessary in their invention. In other words, the electronics integrated in each panel member of each module in the Bio-Rad accused modules and system are not protected from the fluidics by being inside a housing that protects them all. Rather the integrated electronics that Dr. Wereley points to are each protected individually.

114. A person of ordinary skill in the art reading the inventors' statements about Hess would recognize that if in Hess, a single electronic cable exiting the back of a module, in which the cable was spaced apart from the fluidics at the front of the module by at least two walls and a much greater distance than the electronics in the Bio-Rad accused devices are distanced from the fluidics, did not constitute a distinct section that was separated from the fluidics section, then neither does what Dr. Wereley calls the electronics integrated in the panel member of the accused modules.

115. For these reasons, the accused devices do not have an external fluidics section. Similarly, the subsequent elements that I will discuss in the following paragraphs relating to the non fluidics section and the separation of the fluidics from the non fluidics by a panel member and the non fluidics section being internal to the housing and separated from the fluidics by a liquid handling panel when the module is inserted into the housing are also not met.

2. Element [1.f]: "an internal non-fluidics section"

116. Element [1.f] of the '420 patent requires "an internal non-fluidics section."

117. The NGC System does not infringe this element because the NGC System does not include "an internal non-fluidics section" as required by claim 1 of the '420 patent. As

detailed with respect to element 1(e) in the prior paragraphs, which I incorporated herein, each of the Bio-Rad accused modules contain either LED lights, a display or both that are visible to the user and on the same side of the panel member as the fluidics. The pump modules also have electronic switches on the same side of the panel member as the fluidics. They also contain electronics such as a PCB and ribbon line in the "overlay" shown in the assembly documents cited and that are exhibits to this report. These are all part of the non-fluidics section and cannot simply be considered a separate section from the electronics that are inside the housing.

118. In paragraphs 118- 126 Dr. Wereley concludes that there is a non fluidic section, one that he believes does not have fluidics, by pointing to electronics inside the housing. But, as discussed previously, Dr. Wereley does not at all consider the File History. As I discussed previously regarding element 1(e), when the file history is examined, one of ordinary skill in the art can only come to the conclusion that there is not a non fluidics section in the accused Bio-Rad modules.

119. For example, the Hess reference certainly had electronics that were sealed in a box and separated from the fluidics that were outside the housing and on the front face visible to the user. *See* Ex. G at 1423 ("Since the Hess design was conceived with radioactive product processing in mind [e.g. see abstract] the need for sealing each box and electrically connecting each box such that liquid radioactive contamination does not penetrate the boxes or box electrical interconnections is very important, but results in a costly system."); *See* Figs. 2 and 4 reproduced above from the Hess reference showing the fluidics.

120. Nonetheless, as shown in the previous element, the inventors stated Hess was distinct from their invention because there was a single electrical component, a connector between modules, that exited from the back of each module. The inventors considered that

single electrical line to be part of the non fluidics section of each module and not separated from the fluidics of each module.

121. There is no way to distinguish the arrangement of Hess and the arguments the inventors made regarding there being electrical components not separated from fluidic components in the Hess modules from the arrangement in the Bio-Rad accused modules. Each of the Bio-Rad modules has electronics that are not inside the housing, just like Hess. Therefore the Bio-Rad modules do not have a non fluidics section.

122. Further as discussed with element 1(e), it is not proper to call the electronics in the accused devices that are "integrated in the panel member" a section that is distinct from either the electronics inside the housing or the fluidics outside the housing. For example, as discussed previously, with respect to the figures of Bergstrom that I reproduced above showing the flow channel 5 and the electrical lines 12, the Bergstrom reference has electronics and fluidics integrated in a baseplate structure, yet the inventors did not consider them to be distinct sections that were separated. Moreover, the inventors stated that for electronics and fluidics to be in separate sections, they had to be on opposite sides of a at least two different panels—the panel member and the liquid handling panel. Ex. G at 1451. There is no way for this to be true and the Bio-Rad accused modules to meet the claim limitation.

123. As I discussed previously, I do not believe the overlay is the panel member. Thus, the electronics that Dr. Wereley states are "integrated in the panel member are actually in the overlay and on the same side of the panel member (faceplate) as the fluidics. Moreover, even if one considers the overlay and the faceplate as being a single unit that is the panel member, the fluidics and electronics are still not on opposite sides of the two required panel members—the liquid handling panel and the panel member as the inventors stated they must be. Ex. G at 1451.

124. For all these reasons and those discussed with respect to element 1(e), the three accused Bio-Rad liquid handling units do not have a non fluidics section.

3. Element [1.h]: "a panel member arranged to separate the fluidics section from the non-fluidics section"

125. Element [1.h] of the '420 patent requires "a panel member arranged to separate the fluidics section from the non-fluidics section."

126. The NGC System does not infringe this element because the NGC System does not include "a panel member arranged to separate the fluidics section from the non-fluidics section" as claimed. I incorporate my discussion of the prior two elements for this element. In summary, the electronics in the housing are not a separate non-fluidics section from the electronics Dr. Wereley describes as integrated in the panel member. "Integrating" as shown with the arrangement of Bergstrom, does not create separate sections. There is no way to square the representations the inventors made about Mourtada, Bergstrom and Hess with respect to separation, with the arrangement in the Bio-Rad accused modules that have electronics adjacent to and on the same side of the panel member as the fluidics. At a minimum, the electronics that Dr. Wereley describes as being integrated in the panel member are the fluidics in the Bio-Rad accused modules, which are not on "either side" of the panel member as the inventors said they must be. Ex. G at 1451 ("The detector module 10 of Fig. 10 illustrates that fluid and electrical parts are adjacent **not on either side of a panel."**)(emphasis added).

4. Element [1.i]: "wherein the housing comprises a liquid handling panel with at least four component receiving positions arranged in a two dimensional array and adapted to receive said interchangeable modular components such that, when inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing."

127. Element [1.i] of the '420 patent requires "wherein the housing comprises a liquid handling panel with at least four component receiving positions arranged in a two dimensional

array and adapted to receive said interchangeable modular components such that, when inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing."

128. I have discussed why this element is not met with respect to my discussion of elements 1(e), 1(f) and 1(h). I incorporate those discussions fully for this element.

129. The NGC System does not infringe this element because the alleged housing lacks the underlined portions of the claim element: "a liquid handling panel with at least four component receiving positions arranged in a two dimensional array and adapted to receive said interchangeable modular components such that, when inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing."

130. In summary, the failure of proof for this element is most easily demonstrated with reference to the inventors' discussion of the Hess reference. As discussed with respect to elements 1(e) and 1(f), in the Hess reference, each module had electronics sealed in a box and fluidics visible from a side that one can consider the front of the box. The inventors pointed out that what the examiner was considering the modules also had a single electrical connection exiting the back of the box. *See e.g.*, ¶¶ 107-112 herein. For this reason, they concluded that Hess did not have a non fluidics section internal to said housing and a fluidics section external to said housing. There is no way for one of ordinary skill in the art to distinguish the arrangement in Hess that the inventors said was outside the scope of their invention with the arrangement in the accused modules. In the accused modules, there are electronics outside the housing. Those electronics cannot be a section that is distinct from the electronics that are inside the housing, just like the single electronic connection in Hess was not distinct from the electronics contained in the sealed boxes. Because the electronics inside the sealed boxes in Hess, that the examiner

considered a housing did not constitute a non fluidics section that was internal to said housing when inserted, one of ordinary skill in the art could not also consider the electronics that Dr. Wereley considered to be embedded in the panel member to be a non fluidic section that is distinct from the electronics that are inside the housing in the Bio-Rad accused modules.

131. Therefore, Dr. Wereley has failed to meet his burden to establish the existence of this element in the accused fluid handling modules.

5. Element [1.k]: "wherein each interchangeable modular component includes a dedicated cpu unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus"

132. Element [1.k] of the '420 patent requires "wherein each interchangeable modular component includes a dedicated cpu unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus."

133. The NGC System does not infringe any claims of the '420 patent because the alleged interchangeable modular component lacks "a dedicated cpu unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus" as claimed.

134. In particular, Dr. Wereley, at paragraphs 160-170 of his report where he discusses this element, has not established and met his burden of proof that each module acts independently to perform operations after receiving instructions over the bus. First, I do not believe that Dr. Wereley has used the proper definition of the CPU's on the modules acting independently. Second, I do not see proof under the definition that he does use that each of the accused modules acts independently of other modules.

135. Dr. Wereley interprets the "independent" language in the claim to mean independent of other modules. *See* Wereley ¶167. But that is not how one of ordinary skill in

the art would interpret that limitation. The specification gives two alternatives for control. First it describes the master control unit communicating with each module over a bus and those control signals issued by the MCU controlling the modules. *See* Col. 7: 57-60 ("As mentioned above, the chromatography system may comprise a master control unit 40 arranged to communicate with all modular components e.g. 1-26 over a system bus 42 such as a CAN-bus or the like"). In that embodiment, something other than a CPU on the module would instruct the module what to do. The control function could be carried out by for example a particular voltage/current that would make a pump operate at a certain rate. (e.g., A high signal makes the motor operate at one rate and a low signal makes it operate at another rate).

136. Alternatively, the specification indicates that each module could also have a CPU that would allow the module to independently perform operations in response to instructions over the bus. *See* col. 7: 60-63 ("In one embodiment, each modular component is provided with a dedicated CPU unit allowing the component to independently perform operations in response to instructions over the BUS 42.") One of ordinary skill in the art would not read that alternative to do nothing more than take the signal that the master control unit has sent and forward it. For example, if the master control unit sent out a signal that would deliver a certain voltage or current to a module to make it operate at a certain level (e.g., A high or low signal), one of ordinary skill in the art would not read the specification to mean that the CPU would take an instruction and merely forward it to another device to create that same current or voltage or simply translate that instruction into a different format.

137. Rather, one of ordinary skill in the art would understand the passage in the specification relating to the independent operation of the CPU to mean that a signal is received from the master control unit and then the CPU does something above and beyond what that

signal indicates and what the MCU would have done on its own, something that is independent of the signal the MPU sent.

138. One example of that would be the function described for the 2040 instrument which I detailed in my invalidity report. In the 2040, the burette modules have a CPU located directly on them. The 2040 User Manual indicates that the burette modules have very precise control – the ability to vary flow in one of 10,000 increments. To maintain such precise control, one of ordinary skill in the art would recognize that the burette module, using its CPU is independently monitoring the flow value and constantly making adjustments to ensure the set value is being maintained. In that situation, the CPU on the burette is operating independently of the master control unit which would have only sent the original instruction for what the initial parameter should be.

139. Given that the specification describes the back to back situations where either: 1)the Master Control Unit controls the operation of the module, and contrasts that with 2) the situation where the CPU independently controls an operation of the module in response to an instruction from the MCU, one of ordinary skill in the art would not understand the independent control to be control that is independent of what is occurring in other modules as Dr. Wereley does.

140. Contrary to what Dr. Wereley concludes at paragraph 167, the mention of the MCU and the fact that the MCU needs to send instructions would not lead one of ordinary skill in the art to interpret independently to mean independent of other modules just because the CPU must receive some signal from the MCU. [redacted] As I explained in the

paragraph above relating to what the 2040 burette module does, just because a CPU receives an instruction from an MCU does not mean that functions carried out by the CPU cannot be independent of the MCU command.

141. There is no reference in the specification to modules communicating with each other in relation to the control function. Rather the two embodiments in the specification that are directed to this limitation relate to the MCU controlling the module, or the CPU on the module receiving a signal from the MCU and then acting independently of the MCU in carrying out some function on the module.

142. I do not see anything in the testimony that Dr. Wereley cited that leads to a different conclusion. First, Dr. Wereley cites the testimony of Mr. Iovanni who testified that [redacted]. *See* Wereley ¶ 168. [redacted] It is fully consistent with the definition I have put forward. [redacted] Moreover, as I explain below, one of ordinary skill in the art would not look to the Bio-Rad accused product to determine how to interpret the independent limitation in the patent, a limitation created by a different company related to a different system.

143. Mr. Bland's testimony that Dr. Wereley cites also does not support his construction of this element of the claim. All that Mr. Bland testified was that in the accused system, [redacted]. *Id.* at ¶ 168, pages 108-109. But, that does not mean that is what the claim term in the patent means.

That would be like saying that a car that can maintain its speed independent of a driver pressing the accelerator pedal, defines the meaning of a claim in a patent written about a different car that says the car operates independently of operator control. Independent of operator control could certainly relate to an autonomous driving system, not simply cruise control. One needs to see how the term is used in the patent, not some application outside the patent. There is no way to link those facts to determine the meaning of the claim element. I understand that the element of a patent claim must be interpreted in light of what is disclosed in the specification, not with reference to an accused device. If the latter was the method of interpretation, than one would always interpret the claim with the way the accused product worked and there would always be infringement of every patent.

144. Moreover, Mr. Bland's testimony shows that the CPU's on the accused modules do not act independently of the instructions from the MCU. As Dr. Wereley put in his report, Mr. Bland testified that: [redacted] *Id*. at ¶168 p. 108. This testimony indicates that [redacted], not that it is operating independently.

145. I understand that Bio-Rad identified its understanding of the independent requirement in its non-infringement contentions . *See e.g.*, ROG Response 6 supplemented on May 22, 2020. By choosing not to address this construction at all in his opening report, I understand that neither Dr. Wereley nor Mr. Vukicevic can raise it either one of their responsive reports.

146. Next, even if Dr. Wereley's construction were correct, that independent means: "that the particular module's operations be independent from the operations of other modules installed in the system."

147. First, I have reviewed the report of Mr. Vukicevic who allegedly studied the source code to show that it operated in a way consistent with the claims. I do not find that what he states in his report establishes that. For example, nowhere in his report does Mr. Vukicevic state that the Master Control unit issues commands over a bus to a CPU on each of the accused modules that then uses those commands to control the operation of the module independently of other modules . The closest he comes is in paragraph 5, but that paragraph does not say that commands travel over a bus and control each of the accused modules independently of other modules

148. After identifying a number of file names, which I do not think prove anything about the existence of the disputed element, Mr. Vukicevic states that [redacted] Vukicevic at ¶ 5. But this proves nothing with respect to the element. [redacted] He also says nothing about the claimed bus or any requirement for independence.

149. In paragraph 7 Mr. Vukicevic states that [redacted] This does not indicate that the claim

limitation is being used. It does not identify what is sending the signals, how they are being sent and to what on the CU.

150. So, nothing that I see in Mr. Vukicevic's report establishes that the accused devices function in the manner claimed. In fact, in the next few sentences, Mr. Vukicevic states [redacted] Again, this does not establish that the MCU is sending the commands, over a bus to the CPU on each module. Nor does it establish that each CPU is acting independently from the CPU on any other module as Dr. Wereley interprets the limitation. [redacted]

151. Dr. Wereley's independent analysis of this element also does not establish the existence of this element in the accused device. Thus, Dr. Wereley has failed to meet his burden in his opening report.

152. In particular, nothing in paragraphs 160-170 of Dr. Wereley's report establishes that the CPU on each of the accused modules is receiving signals over a system bus that then cause it to carry out operations on the module. Moreover, nothing in those paragraphs of Dr. Wereley's report indicate that any signals that the CPUs receive are from the MCU which is the only description the specification contains for where the signals must be coming from. See Col. 7: 54-67, Description of Fig. 8 Dr. Wereley nowhere in his report identifies where the signals are originating from. Thus he has failed to meet his burden to establish this element. Additionally, see next element. Further, the separate computer that a user of the Bio-Rad accused devices uses to input information and which contains the user interface is not the MCU as described in the specification. Rather, it is a distinct control computer. See Col. 8: ("The master control unit 40

comprises a system controller 46 for communicating with internal and external components and control computers (not shown)"). Indeed, having a master control unit outside the housing would also be inconsistent with how the inventors distinguished Hess during prosecution, as it would require a bus outside of the housing.

6. Element [1.l]: "wherein the master control unit is arranged to automatically identify interchangeable modular components"

153. Element [1.l] of the '420 patent requires "wherein the master control unit is arranged to automatically identify interchangeable modular components."

154. The NGC System does not infringe any claims of the '420 patent because the alleged master control unit is not "arranged to automatically identify interchangeable modular components" as claimed. The evidence that Dr. Wereley cites at paragraphs 171-174 shows that this element is not met. Rather than showing that the MCU automatically identifies an interchangeable modular unit, the testimony of Mr. Bland that Dr. Wereley cited shows that [redacted]. *See e.g.*, Wereley at ¶ 171.

155. The NGC Instrument guide also does not establish that the MCU identifies each interchangeable module that inserted into the machine. All the guide says is: "Each module has a unique electronic ID that enables the system to recognize its function when the module is placed into the bay. For example, the system can distinguish between a sample inject valve module and a sample inlet valve module even though they each occupy a single wide slot." *See* Wereley at ¶171. [redacted] *Id.*

156. But the fact that the system identifies a module does not mean the element is met. The system is composed of multiple elements. The claim element, however, is very specific. The MCU is the component in the system that must identify the module inserted into the housing. The fact that the identity may be passed on to the MCU at some point after it is identified by some other component of the system does not satisfy the element. One of ordinary skill in the art would understand identify to mean the component that makes the identification, not any component that later receives the information. This is consistent with the specification which states it is the MCU which makes the identification and not CPU's on modules. Col. 8: 8-14 ("According to one embodiment, different component modules are automatically identified by the master control u nit, whereby they may be moved essentially freely between different positions. Moreover, the master control unit may be arranged to provide said information to Chromatography control software whereby experimental setup and planning may be performed."). This passage makes clear to one of ordinary skill in the art that having one device in a system identifying a module is different from that device passing that identity on to other devices in the system as occurs in the accused system.

157. Last, I see nothing in Mr. Vukicevic's report that shows that Plaintiff has met its burden of establishing the existence of this element. In paragraph 8 of his report, Mr. Vukicevic states that [redacted] Vukicevic, ¶ 8. First, Mr. Vukicevic is not even sure if this is the case. Second, nothing in this sentence or in any other part of Mr. Vukicevic's report establish that it is the MCU, which identifies the modules as the claim requires.

158. Therefore, Dr. Wereley, Mr. Vukicevic and Plaintiffs have failed to establish the existence of this element in the accused devices. .

7. Element [1.m]: "wherein said housing is adapted to accommodate at least one pump, at least one sensor unit and at least two fluid control valves of different configurations, of which at least three of the pump, the sensor unit and the fluid control valves are interchangeable modular components"

159. For the reasons stated previously the sample inject module and the two system pump modules are not interchangeable modular components because the interchangeable modular components of claim 1 need to have the fluidics and non fluidics sections of elements 1.e and 1.f as well as the separation requirements of elements 1 (h, i, j) and the independent operations requirements of element 1.k and identification requirement of 1(l) which the sample inject module and the two pump modules do not have as described previously which I incorporate herein. The same is true for the other fluid handling modules that Dr. Wereley identifies as alternatives to the pump and inject valve for this element.

160. Further, with respect to the UV module that Dr. Wereley relies on to satisfy this claim element, he identifies a sensor unit, but neither the Bio-Rad single or multi-wavelength UV detectors qualifies as interchangeable modular units that can satisfy this element because neither has the required fluidics and non fluidics sections, a panel member for separating those sections, and a liquid handling panel for separating those sections, nor does either satisfy the requirement that the electronics be internal to the housing when inserted.

161. One of ordinary skill in the art reading the file history, specification and claims would conclude that the Bio-Rad single and multi-wavelength detectors are not interchangeable modular units as required by the claims. In fact, the inventors addressed this very type of component and unequivocally stated that such a detector did not come within the claims of its invention.

162. In distinguishing the Bergstrom reference the inventors pointed to the detector module 10 as not being within the realm of its invention. *See* Ex. G at GEHC 1450. In particular, the inventors first said:

> lines/conductors 12 [column 3 lines 50-58]. Further, column 7 lines 3 to 11 describes signal communication to a detector module 40 (Figure 10) via contacts 20 on the module and corresponding contacts 19 (Figure 1) on the base plate 1. The detector 40 also includes a processing unit 55, which is very likely to be electronic in nature and conductors 41 which both appear to be next to liquid paths. It is suggested that other modules will have corresponding power and signal paths: *"other modules (for instance valve modules) may be provided with power and signal transmission lines/conductors."* [column 7 lines 8-10].

163.

164. The Bergstrom specification at Col. 7: 3-11 describes that the detector module can be based on pH, UV, IR, conductivity, capacitance refractive index, etc.:

> 7
>
> function in the form of valves, filter, matrices, additional connection, detectors, etc.
>
> FIG. **10** illustrates a detector module. The detector unit (**40**) may be based on pH, UV, IR, conductivity, capacitance, refractive index, etc. The transmission of signals from the module is effected through lines/conductors (**41**) and contacts (**20**) to corresponding contacts (**19**—shown in FIG. **1**) in the connecting device. Correspondingly, other modules (for instance valve modules) may be provided with power and signal transmission lines/conductors. Detector modules may be equipped with signal processing units (**55**).

165.

166. The Bio-Rad UV modules have both a UV detector and a conductivity detector on them as can be seen in the images below along with Fig. 10 from the Bergstrom patent:

167. 

.

168. 

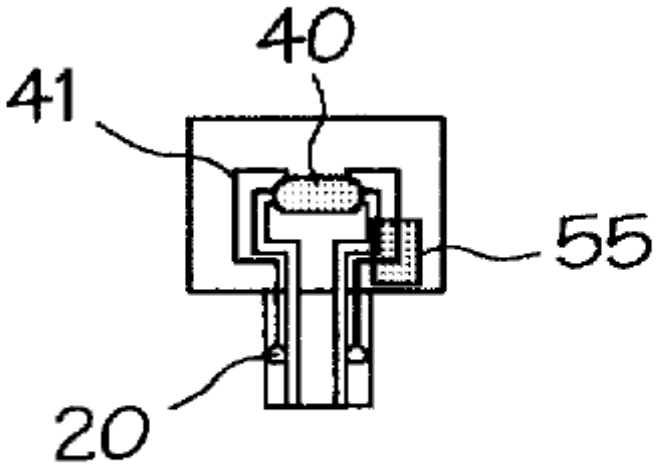

FIG. 10

169.

170. Further images of the Bio-Rad UV and conductivity detectors are attached as an exhibit to this report.

171. The inventors made it clear and unequivocally stated that a detector, such as a single or multiwavelength detector which Dr. Wereley has accused of satisfying this element cannot.

172. The statements were so clear that even Cytiva's prior expert Dr. Scandella recognized that the UV detector had electronics on the same side of the panel member as the fluidics section. That testimony is reproduced below:

BY MR. BILSKER:
Q So let's see if you can answer it again.
Is the screen on the Bio-Rad Multi UV Wavelength Detector, is that electronics?
A As an isolated element, it is electronics, yes. 10:18:49
Q Is it an electrical component?
A It is an electrical component, yes.
Q And that electrical component, is that internal or external to the housing of the machine? 10:19:03
A Well, I, as not an expert in this area, assume that the surface of the screen is -- is not an electrical component. What's behind it is an electrical component.
Q Do you know whether any of the electrical 10:19:22

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173.

Q Really? So you think the claim is -- you think it's fine to have electronics and electrical components external to the housing of the machine? 10:26:32

A For example, the conductivity cell that you've already pointed to is external to the machine. 10:26:46

Q I know that.

A And if you consider that the -- that the electrodes of the conductivity cell are electronics or electronic, or whatever you want to -- however you want to define that, then that's external to the 10:26:58

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machine, yes.

Q And the light source is an electrical component, and that would be external to the housing of the machine, correct?

A It might be. I didn't determine where the light source was. 10:27:08

Q Well, let's assume that the light source is contained within -- within that housing that you point to that says fluidics section. Do you see that? 10:27:28

A Okay.

Q If it's contained within that, that would be an electrical component which is external to the housing of the machine, correct?

MR. NISHIMOTO: Objection. Form. 10:27:37

174. THE WITNESS: Yes, I think so.

175. In fact, Dr. Scandella testified at p. 48 of his deposition that the UV module, which was exhibit 41 to his report contained electronic components on the same side of the panel member as the fluidics.

12	Q	The module shown in Figure 41 --	
13	A	Yes.	
14	Q	-- in your declaration has electrical	
15	components on the same side of the panel as the		10:30:5
16	fluidics section, correct?		
17	A	Right.	

176.

177. I reproduce Fig. 41 along with Dr. Scandella's annotations of the figure and a short paragraph from his report describing the figure below:

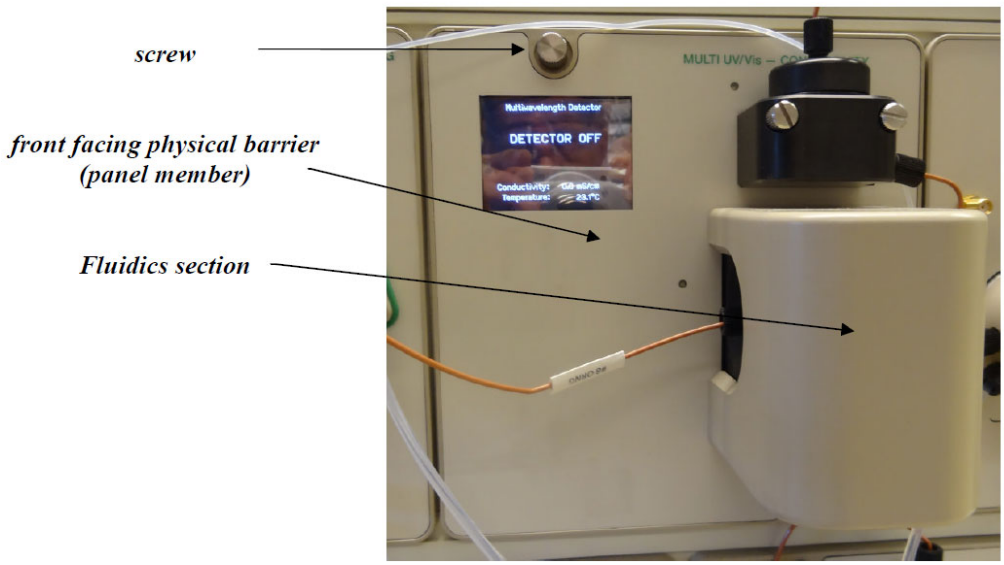


Fig. 41

42. The panel member also provides for attachment of the modular component to the liquid handling panel. Specifically, the panel member contains a screw or screws (shown in Figure 41 above) which, when tightened, attach the modular component to the liquid handling

178. panel (shown in Figure 42 below). *See also* NGC Instrument Guide v. 1 pp. 187-188

179. Given the statements of the inventors, the testimony of Dr. Scandella and the images of the UV and conductivity detector, one of ordinary skill in the art could not conclude that the UV/Conductivity modules have: fluidics and non fluidics sections, that they have a panel member that separates the fluidic from non fluidic sections, that they have a liquid handling panel that separtes fluid from non fluidics, that the non fluidic electronic section is internal to the housing when inserted into the respective cavity of the housing. I have confirmd in conversations with Joe Hilario that each of the Bio-Rad UV/Conductivity modules (eg single and multi-wavelength) have electronics outside the housing and on the same side of the panel member as the fluidics section. For example, [redacted] . For at least all these reasons, the UV/Conductivity module cannot meet this claim element. I did not see any other sensor unit that Dr. Wereley relied on to meet the sensor limitation, but even if he did, all the sensor units that Bio-Rad can use in the accused systems contain the same arrangement as the UV/Conductivity modules. There are electronics that are part of the modules that are on the outside of the housing and on the same side of the panel member as the fluidics. Thus, such sensor units would not meet the limitations of the claims for the reasons already described previously for the liquid handling units. Moreover sensor units such as the PH detector contain additional electronics that are part of the module, external rather than internal to the housing and on the same side of the panel member as the fluidics. The PH detector has an electrode that is placed in contact with fluid and is part of the module. Thus the PH detector module cannot meet this limitation of claim 1 or the limitations of claim 5 below.

180. Many of the subsequent claims contain the same limitations and whether or not specifically stated, the arguments made thus far are specifically incorporated and become part of the argument for the subsequent limitations as well.

8. Dependent Claim 5: "further comprises a pH electrode that is external to the housing"

181. Claim 5 depends from claim 1, and requires that the recited liquid chromatography system "further comprises a pH electrode that is external to the housing."

182. I have discussed why this element is not met with respect to my discussion of element 1.e. and the last element discussed above for claim 1(m). I incorporate those discussions fully for this element. Therefore, the "pH electrode" is not "external to the housing" as required.

9. Dependent Claim 6: "that the at least two fluid control valves include an injection valve, a column valve with integrated pressure sensors, a quaternary valve, an inlet valve, a sample inlet valve, a pH valve, or an outlet valve"

183. Claim 6 depends from claim 5, and requires "that the at least two fluid control valves include an injection valve, a column valve with integrated pressure sensors, a quaternary valve, an inlet valve, a sample inlet valve, a pH valve, or an outlet valve."

184. I have discussed why this element is not met with respect to my discussion of element 1.e. and the other elements of claim 1. All of the fluid handling modules in the Bio-Rad accused devices are structured in the same way as the pump and inject valves I discussed with claim 1 and cannot meet the elements of that claim for the same reasons. Further, as discussed above with regard to element 1(m) all of the sensor units or modules used in the Bio-Rad accused devices have the same general structure. In addition to the types of electronics identified for the fluid handling units, all the sensor units have further electronics outside the housing which are used to perform the sensing function.

10. Dependent Claim 7: "the pH electrode is connected to a pH valve formed as an interchangeable modular component"

185. Claim 7 depends from claim 5, and requires that "the pH electrode is connected to a pH valve formed as an interchangeable modular component."

186. For the reasons stated previously with respect to the claims discussed already, a pH valve with an electrode attached in the Bio-Rad accused products cannot infringe.

11. Dependent Claim 8: "the pH valve includes an integrated flow cell for in-line monitoring of pH levels"

187. Claim 8 depends from claim 7, and requires that "the pH valve includes an integrated flow cell for in-line monitoring of pH levels." See claim 7.

12. Dependent Claim 15: "the at least two fluid control valves include an injection valve, a column valve with integrated pressure sensors, a quaternary valve, an inlet valve, a sample inlet valve, a pH valve, or an outlet valve."

188. Claim 15 depends from claim 1, and requires "the at least two fluid control valves include an injection valve, a column valve with integrated pressure sensors, a quaternary valve, an inlet valve, a sample inlet valve, a pH valve, or an outlet valve."

189. For the reasons stated previously with respect to the claims already discussed, any of these modules in the Bio-Rad system cannot meet the limitations of this claim. .

13. Element [17.v]: "a panel member arranged to separate a fluidics section from a non-fluidics section"

190. Element [17.v] of the '420 patent requires "a panel member arranged to separate a fluidics section from a non-fluidics section."

191. I have discussed why this element is not met with respect to my discussion of element 1(e) through 1.h. I incorporate those discussions fully for this element.

14. Element [17.ix]: "wherein the housing comprises a liquid handling panel with two or more component receiving positions adapted to receive said interchangeable modular components such that, when

inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing"

192. See corresponding element of claim 1 which I incorporate herein. Element

15. Element [17.xi]: "wherein each interchange modular component includes a dedicated CPU unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus"

193. Element [17.xi] of the '420 patent requires "each interchange modular component includes a dedicated CPU unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus."

194. I have discussed why this element is not met with respect to my discussion of element 1.k . I incorporate those discussions fully for this element.

195. In summary, a person of ordinary skill in the art would not read this limitation to mean that the "modular fluid handling unit" cpu does nothing more than take the signal that the master control unit has sent and forward it. For example, if the master control unit sent out a signal that would deliver a certain voltage or current to a module to make it operate at a certain level (*e.g.*, A high or low signal), one of ordinary skill in the art would not read the specification to mean that the CPU would take an instruction and merely create that same current or voltage or simply translate that instruction into a different format.

196. Rather, one of ordinary skill in the art would understand the passage in the specification relating to the use independent operation of the CPU to mean that a signal is received from the master control unit and then the CPU does something above and beyond what that signal indicates and what the MCU would have done on its own, something that is independent of the signal the CPU sent.

16. Element [17.xiii]: "wherein said housing is adapted to accommodate at least one pump, at least one sensor unit, and at least two fluid control valves of different configurations, of which at least two of the

pump, the sensor unit, and the fluid control valves are interchangeable modular components"

197. Element [17.xiii] of the '420 patent requires "said housing is adapted to accommodate at least one pump, at least one sensor unit, and at least two fluid control valves of different configurations, of which at least two of the pump, the sensor unit, and the fluid control valves are interchangeable modular components"

198. I have discussed why this element is not met with respect to my discussion of element 1.k of the '420 patent. I incorporate those discussions fully for this element.

17. Dependent Claim 22

199. *Claim 22* is analogous to dependent claim 5. *See* VII.A.8.

18. Dependent Claim 23

200. *Claim 23* is analogous to dependent claim 6. *See* VII.A.9.

19. Dependent Claim 24

201. *Claim 24* is analogous to dependent claim 7. *See* VII.A.10.

20. Dependent Claim 25

202. *Claim 25* is analogous to dependent claim 8. *See* VII.A.11.

21. Element [27.e]: "a panel member arranged to separate a fluidics section from a non-fluidics section"

203. Element [27.e] of the '420 patent requires "a panel member arranged to separate a fluidics section from a non-fluidics section."

204. I have discussed why this element is not met with respect to my discussion of element 1.h. I incorporate those discussions fully for this element.

205. The NGC System does not infringe this element because the NGC System does not include "a panel member arranged to separate the fluidics section from the non-fluidics section" as claimed. I incorporate my discussion of elements [1.e] and [1.f] for this element. In

summary, the electronics in the housing are not a separate non-fluidics section from the electronics Dr. Wereley describes as embedded in the panel member. "Embedding" as shown with the arrangement of Bergstrom does not create separate sections. There is no way to square the representations the inventors made about Mourtada, Bergstrom and Hess with respect to separation, with the arrangement in the Bio-Rad accused modules that have electronics adjacent to and on the same side of the panel member as the fluidics. At a minimum, the electronics that Dr. Wereley describes as being embedded in the panel member are the fluidics in the Bio-Rad accused modules, which are not on "either side" of the panel member as the inventors said they must be. Ex. G at 1451 ("The detector module 10 of Fig. 10 illustrates that fluid and electrical parts are adjacent **not on either side of a panel."**)(emphasis added).

22. Element [27.i]: "wherein the housing comprises a liquid handling panel with at least four component receiving positions arranged in a two dimensional array and adapted to receive said interchangeable modular components such that, when inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing"

206. Element [27.i] of the '420 patent requires "wherein the housing comprises a liquid handling panel with at least four component receiving positions arranged in a two dimensional array and adapted to receive said interchangeable modular components such that, when inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing."

207. I have discussed why this element is not met with respect to my discussion of elements 1(e), 1(f) and 1(h). I incorporate those discussions fully for this element.

208. The NGC System does not infringe this element because the alleged housing lacks the underlined portions of the claim element: "the housing comprises a liquid handling panel with at least four component receiving positions arranged in a two dimensional array and

adapted to receive said interchangeable modular components such that, when inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing."

209. In summary, the failure of proof for this element is most easily demonstrated with reference to the inventors' discussion of the Hess reference. As discussed with respect to elements 1(e) and 1(f), in the Hess reference, each module had electronics sealed in a box and fluidics visible from a side that one can consider the front of the box. The inventors pointed out that what the examiner was considering the modules also had a single electrical connection exiting the back of the box. *See* e.g. ¶ 91-93 herein. For this reason, they concluded that Hess did not have a non fluidics section internal to said housing and a fluidics section external to said housing. There is no way for one of ordinary skill in the art to distinguish the arrangement in Hess that the inventors said was outside the scope of their invention with the arrangement in the accused modules. In the accused modules, there are electronics outside the housing. Those electronics cannot be a section that is distinct from the electronics that are inside the housing, just like the single electronic connection in Hess was not distinct from the electronics contained in the sealed boxes. Because the electronics inside the sealed boxes in Hess, that the examiner considered a housing did not constitute a non fluidics section that was internal to said housing when inserted, one of ordinary skill in the art could not also consider the electronics that Dr. Wereley considered to be embedded in the panel member to be a non fluidic section that is distinct from the electronics that are inside the housing in the Bio-Rad accused modules.

210. Therefore, Dr. Wereley has failed to meet his burden to establish the existence of this element in the accused fluid handling modules.

23. Element [27.k]: "wherein each interchangeable modular component includes a dedicated CPU unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus"

211. Element [27.k] of the '420 patent requires "each interchangeable modular component includes a dedicated CPU unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus."

212. I have discussed why this element is not met with respect to my discussion of element 1.k of the '420 patent. I incorporate those discussions fully for this element.

213. In summary, a person of ordinary skill in the art would not read this limitation to mean that the "modular fluid handling unit" cpu does nothing more than take the signal that the master control unit has sent and forward it. For example, if the master control unit sent out a signal that would deliver a certain voltage or current to a module to make it operate at a certain level (*e.g.*, A high or low signal), one of ordinary skill in the art would not read the specification to mean that the CPU would take an instruction and merely create that same current or voltage or simply translate that instruction into a different format.

214. Rather, one of ordinary skill in the art would understand the passage in the specification relating to the use independent operation of the CPU to mean that a signal is received from the master control unit and then the CPU does something above and beyond what that signal indicates and what the MCU would have done on its own, something that is independent of the signal the CPU sent.

24. Element [27.m]: "wherein said housing is adapted to accommodate at least one pump, at least one sensor unit and at least two fluid control valves of different configurations, of which at least two of the pump, the sensor unit, and the fluid control valves are interchangeable modular components"

215. For the reasons stated previously the sample inject module and the two system pump modules are not interchangeable modular components because the interchangeable modular components of claim 1 need to have the fluidics and non fluidics sections of elements 1.e and 1.f as well as the separation requirements of elements 1 (h, i, j) and the independent

operations requirements of element 1.k and identification requirement of 1(l) which the sample inject module and the two pump modules do not have as described previously which I incorporate herein.

216. In summary, with respect to the UV module that Dr. Wereley points relies on to satisfy this claim element, he identifies a sensor unit, but neither the Bio-Rad single or multi-wavelength UV detectors qualifies as interchangeable modular units that can satisfy this element because neither has the required fluidics and non fluidics sections, a panel member for separating those sections, and a liquid handling panel for separating those sections, nor does either satisfy the requirement that the electronics be internal to the housing when inserted.

217. One of ordinary skill in the art reading the file history, specification and claims would conclude that the Bio-Rad single and multi-wavelength detectors are not interchangeable modular units as required by the claims. In fact, the inventors addressed this very type of component and unequivocally stated that such a detector did not come within the claims of its invention.

25. Dependent Claim 30: "the system further comprises a pH electrode that is external to the housing, and wherein the pH electrode is connected to a pH valve formed as an interchangeable modular component"

218. Claim 30 depends from claim 27, and requires that "the system further comprises a pH electrode that is external to the housing, and wherein the pH electrode is connected to a pH valve formed as an interchangeable modular component."

219. I have discussed why this element is not met with respect to my discussion of element 1.e and claim 5. I incorporate those discussions fully for this element. Therefore, the "pH electrode" is not "external to the housing" as required.

B. Non-Infringement of the '589 Patent

1. Element [1.d]: "wherein the housing unit comprises on one external side of the housing unit a plurality of receiving positions, each receiving position adapted to receive the modular fluid handling units therein such that a fluid handling section thereof is on the external side of the housing unit, the receiving positions being arranged in a two dimensional array"

220. Element [1.d]: "wherein the housing unit comprises on one external side of the housing unit a plurality of receiving positions, each receiving position adapted to receive the modular fluid handling units therein such that a fluid handling section thereof is on the external side of the housing unit, the receiving positions being arranged in a two dimensional array."

221. I have discussed why there is not fluid handling section in the accused products with respect to claim 1 of the 420 paten which I incorporate fully herein.

2. Element [1.g]: "wherein each modular fluid handling unit . . . includes a CPU for independently performing fluid control operations in response to instructions over a system BUS"

222. Element [1.g] of the '589 patent requires "wherein each modular fluid handling unit . . . includes a CPU for performing fluid control operations independently irrespective of the location within the housing unit."

223. See discussion for corresponding element of claim 1 of the 420 patent incorporated herein.

3. Element [6.f]: "each modular fluid handling unit includes a CPU for performing fluid control operations independently irrespective of the location within the housing unit"

224. See corresponding element of claim 1 of the 420 patent incorporated herein.

4. Dependent Claim 7: "housing unit is adapted to accommodate at least one pump, at least one sensor unit and at least two fluid control valves of different configurations, of which at least two of the pump, the sensor unit, and the fluid control valves are freely arrangeable modular fluid handling units"

225. Claim 7 depends from 6, and requires that the "housing unit is adapted to accommodate at least one pump, at least one sensor unit and at least two fluid control valves of different configurations, of which at least two of the pump, the sensor unit, and the fluid control valves are freely arrangeable modular fluid handling units."

226. I have discussed why this element is not met with respect to my discussion of claim 1 and element 1.e and dependent claims 5-6 of the '420 patent. I incorporate those discussions fully for this element.

5. Dependent Claim 8: "housing unit is adapted to accommodate at least one pump, at least one sensor unit and at least two fluid control valves of different configurations, of which at least two of the pump, the sensor unit and the fluid control valves are arranged as modular fluid handling units"

227. Claim 8 depends from 1, and requires that the "housing unit is adapted to accommodate at least one pump, at least one sensor unit and at least two fluid control valves of different configurations, of which at least two of the pump, the sensor unit and the fluid control valves are arranged as modular fluid handling units."

228. I have discussed why this element is not met with respect to my discussion of element 1.e and dependent claims 5-6 of the '420 patent. I incorporate those discussions fully for this element.

6. Dependent Claim 9: "the at least two fluid control valves include an injection valve, a column valve with integrated pressure sensors, a quaternary valve, an inlet valve, a sample inlet valve, a pH valve, and an outlet valve"

229. Claim 9 depends from claim 8, which in turn depends from claim 1, and requires that "the at least two fluid control valves include an injection valve, a column valve with integrated pressure sensors, a quaternary valve, an inlet valve, a sample inlet valve, a pH valve, and an outlet valve."

230. I have discussed why this element is not met with respect to my discussion of element 1.e and dependent claims 5-6 of the '420 patent. I incorporate those discussions fully for this element.

7. Dependent Claim 13: "the automatic liquid chromatography system further comprises a pH electrode that is external to the housing unit, and wherein the pH electrode is connected to a pH valve arranged as a modular fluid handling unit"

231. Claim 13 depends from claim 1, and requires that "the automatic liquid chromatography system further comprises a pH electrode that is external to the housing unit, and wherein the pH electrode is connected to a pH valve arranged as a modular fluid handling unit."

232. I have discussed why this element is not met with respect to my discussion of element 1.e and dependent claims 5-6 of the '420 patent. I incorporate those discussions fully for this element.

8. Dependent Claim 14: "the pH valve includes an integrated flow cell for in-line monitoring of pH levels"

233. Claim 14 depends from claim 13, and requires that "the pH valve includes an integrated flow cell for in-line monitoring of pH levels."

234. I have discussed why this element is not met with respect to my discussion of element 1.e and dependent claims 5-6 of the '420 patent. I incorporate those discussions fully for this element.

9. Dependent Claim 21: "the fluid handling section of the modular fluid handling unit is sealed from an internal side of the housing unit when fitted in a receiving position of the housing unit"

235. Claim 21 depends from claim 20, and requires that "the fluid handling section of the modular fluid handling unit is sealed from an internal side of the housing unit when fitted in a receiving position of the housing unit."

236. I have discussed why this element is not met with respect to my discussion of element 1.h of the '420 patent. I incorporate those discussions fully for this element.

237. The NGC System does not infringe this element because the NGC System does not include "a panel member arranged to separate the fluidics section from the non-fluidics section" as claimed. I incorporate my discussion of elements [1.e] and [1.f] for this element. In summary, the electronics in the housing are not a separate non-fluidics section from the electronics Dr. Wereley describes as embedded in the panel member. "Embedding" as shown with the arrangement of Bergstrom does not create separate sections. There is no way to square the representations the inventors made about Mourtada, Bergstrom and Hess with respect to separation, with the arrangement in the Bio-Rad accused modules that have electronics adjacent to and on the same side of the panel member as the fluidics. At a minimum, the electronics that Dr. Wereley describes as being embedded in the panel member are the fluidics in the Bio-Rad accused modules, which are not on "either side" of the panel member as the inventors said they must be. Ex. G at 1451 ("The detector module 10 of Fig. 10 illustrates that fluid and electrical parts are adjacent **not on either side of a panel."**)(emphasis added).

10. Dependent Claim 24: "a pH electrode that is external to the housing unit, and wherein the pH electrode is connected to a pH valve arranged as a modular fluid handling unit"

238. Claim 24 depends from claim 6, and requires "a pH electrode that is external to the housing unit, and wherein the pH electrode is connected to a pH valve arranged as a modular fluid handling unit."

239.

11. Dependent Claim 25: "the pH valve includes an integrated flow cell for in-line monitoring of pH levels"

240. Claim 24 depends from claim 24, which depends from claim 6, and requires "the pH valve includes an integrated flow cell for in-line monitoring of pH levels."

241. I have discussed why this element is not met with respect to my discussion of element 1.e and dependent claims 5-6 of the '420 patent. I incorporate those discussions fully for this element.

12. Dependent Claim 26: "the modular fluid handling units include two double piston pumps, one injection valve for injecting a sample onto a column connecting a flow path of the liquid chromatography system, a UV monitor, and a mixer"

242. Claim 26 depends from claim 6, and requires "the modular fluid handling units include two double piston pumps, one injection valve for injecting a sample onto a column connecting a flow path of the liquid chromatography system, a UV monitor, and a mixer."

243. I have discussed why this element is not met with respect to my discussion of element 1.e and dependent claims 5-6 of the '420 patent. I incorporate those discussions fully for this element.

C. Non-Infringement of the '590 Patent

1. Element [1.b]: "interchanging at least two of the interchangeable modular components in a housing unit comprising at least four component receiving positions arranged in a two dimensional array, so as to allow for modification of the liquid chromatography fluid flow path among the at least four interchangeable modular components"

244. Dr. Wereley has not shown that this element was met. I understand that in order to infringe this claim, which is a method claim the steps claimed need to have been performed. Additionally, they need to have been performed in the United States and after the 590 patent issued on January 18, 2017. I see no such proof offered in Dr. Wereley's report.

245. At paragraphs 491-507, Dr. Wereley states that he has seen videos of people changing modules. But he does not establish in his report where this alleged changing is

occurring, and he does not establish the date on which the alleged changing occurred. Further he does not establish that the fluid flow path actually changed. I understand that this element requires that fluid be flowed through the system and that the path be different than the path that existed before the change. I do not see evidence of that in Dr. Wereley's report.

246. Moreover, Dr. Wereley's claim, citing testimony from Mr. Chapman at ¶ 501, that Bio-Rad changes the modules on customers machines approximately [redacted] of the time does not establish infringement of this element. First, the testimony from Mr. Chapman stated that he guessed changes were made in [redacted] of the occasions where he was present helping customers. That does not mean that Mr. Chapman is present at 100% of customer sites and thus his guess of [redacted] equates to [redacted] of Bio-Rad customers performing this operation. Second, Mr. Chapman did not testify that the times where he was present and customers made changes were done in the United States and after January 18, 2017. Last, Mr. Chapman did not testify that the fluid flow patent changed. Moving a module to a different position does not necessarily change the flow path. For example if one has two pump modules, module one can be placed where module 2 was, and a new pump can then be placed where module one was.

247. Additionally, Dr. Wereley cites as proof the fact that Discover machines are shipped with no modules in them and then are populated with modules. But placing a module in a machine with no modules does not satisfy the claim. Rather, modules must be taken out, and the flow path in situation one and situation two, (the interchanged modules) must be different. That is not possible when the first situation had no flow path at all because it had no modules.

2. Element [1.c]: "wherein each of the at least four interchangeable modular components comprises a CPU unit for independently performing fluid control operations in response to instructions from a system controller when installed in a component receiving position of the housing unit"

248. Element [1.c] of the '590 patent requires "wherein each of the at least four interchangeable modular components comprises a CPU unit for independently performing fluid control operations in response to instructions from a system controller when installed in a component receiving position of the housing unit."

249. The NGC System does not infringe claim 1 of the '590 patent because it lacks "at least four interchangeable modular components comprises a CPU unit for independently performing fluid control operations in response to instructions from a system controller when installed in a component receiving position of the housing unit."

250. I have discussed why this element is not met with respect to my discussion of elements 1.k of the '420 patent. I incorporate those discussions fully for this element.

251. In summary, a person of ordinary skill in the art would not read this limitation to mean that the "modular fluid handling unit" cpu does nothing more than take the signal that the master control unit has sent and forward it. For example, if the master control unit sent out a signal that would deliver a certain voltage or current to a module to make it operate at a certain level (*e.g.*, A high or low signal), one of ordinary skill in the art would not read the specification to mean that the CPU would take an instruction and merely create that same current or voltage or simply translate that instruction into a different format.

252. Rather, one of ordinary skill in the art would understand the passage in the specification relating to the use independent operation of the CPU to mean that a signal is received from the master control unit and then the CPU does something above and beyond what that signal indicates and what the MCU would have done on its own, something that is independent of the signal the CPU sent.

3. Claims 2 and 3, Flow path shortened

253. None of the evidence that Dr. Wereley cited shows that even if modules are interchanged, the flow path is shortened. The same is true for the evidence he cited for claim 3. Thus, he failed to meet his burden on these claims.

4. Claims 10 and 12

254. Dr. Wereley has not met his burden to establish infringement of these claims. While he says the steps claimed could be done, he points to nothing where these steps were actually done in the United States after Jan. 18, 2017. That is what is necessary to establish infringement of this method claim. For this reason, he has not met his burden to show infringement.

5. Element [13.h]: "comprising a CPU that allows independent fluid control operations in response to instructions from the main controller when installed in the component receiving position of the housing unit**"**

255. Element [13.h] requires "the at least two interchangeable modular fluid handling units … compris[e] a CPU that allows independent fluid control operations in response to instructions from the main controller when installed in the component receiving position of the housing unit"

256. I have discussed why this element is not met with respect to my discussion of element 1.k of the '420 patent. I incorporate those discussions fully for this element.

257. In summary, a person of ordinary skill in the art would not read this limitation to mean that the modular component's cpu does nothing more than take the signal that the master control unit has sent and forward it. For example, if the master control unit sent out a signal that would deliver a certain voltage or current to a module to make it operate at a certain level (*e.g.*, A high or low signal), one of ordinary skill in the art would not read the specification to mean that the CPU would take an instruction and merely create that same current or voltage or simply translate that instruction into a different format.

258. Rather, one of ordinary skill in the art would understand the passage in the specification relating to the use independent operation of the CPU to mean that a signal is received from the master control unit and then the CPU does something above and beyond what that signal indicates and what the MCU would have done on its own, something that is independent of the signal the CPU sent.

6. Claim 14 "adding an expansion housing unit that includes a plurality of component receiving positions, each component receiving position being adapted to receive the at least one interchangeable modular fluid handling unit, and placing at least one additional interchangeable modular fluid handling unit in one of the component receiving positions in the expansion housing"

259. While Dr. Wereley states that the elements of these claims could be done, he does not cite evcidence showing that the expansion housings were used. Nor does he show any use in the United States after January 18, 2017. He has therefore failed to meet his burden to establish infringement.

7. Claim 17: "the CPU allows for automatic identification by the liquid chromatography system upon placement in a component receiving position of similar size and shape"

260. I do not agree with Dr. Wereley that the CPU does need to do the identification. In any event, the testimony that Dr. Wereley cites and his conclusion about infringement of this claim are inconsistent with the conclusions he reached in corresponding claims of the 420 patent where he stated that the MCU was doing the identification. I incorporated the arguments I made with respect to that claim. Moreover as with the other claims in this patent he has not shown that the method was actually performed in the U.S. at the proper time.

8. Claim 18: "the at least two interchangeable modular fluid handling units are connected to the system by a system BUS"

261. Dr. Wereley has not provided any evidence showing that this step was performed in the U.S. at the proper time to establish infringement. Therefore he has failed to meet his burden of proof.

D. The '591 Patent

1. The NGC System Does Not Infringe Claim 9 of the '591 Patent at Least Because it Lacks Several Elements in Claim 1 from Which it Depends

262. Claim 9 depends on claim 1. I note that claim 1 of the '591 patent is nearly identical to claim 1 of the '420 patent. Thus, I incorporate my analysis of claim 1 of the '420 patent.

(a) Element [1.v]: an external fluidics section

263. Element [1.v] requires "an external fluidics section."

264. I have discussed why this element is not met with respect to my discussion of element 1.e of the '420 patent. I incorporate those discussions fully for this element.

(b) Element [1.vi]: an internal non fluidics section

265. I have discussed why this element is not met with respect to my discussion of element 1.f of the '420 patent. I incorporate those discussions fully for this element.

(c) Element [1.viii]: "a panel member arranged to separate the fluidics section from the non-fluidics section"

266. Element [1.viii] of claim 1 of the '591 patent requires "a panel member arranged to separate the fluidics section from the non-fluidics section."

267. The NGC System does not infringe claim 9 at least because it lacks "a panel member arranged to separate the fluidics section from the non-fluidics section," as claimed.

268. I have discussed why this element is not met with respect to my discussion of element 1.h of the '420 patent. I incorporate those discussions fully for this element.

269. The NGC System does not infringe this element because the NGC System does not include "a panel member arranged to separate the fluidics section from the non-fluidics section" as claimed. I incorporate my discussion of elements [1.e] and [1.f] of the '420 patent for this element. In summary, the electronics in the housing are not a separate non-fluidics section from the electronics Dr. Wereley describes as embedded in the panel member. "Embedding" as shown with the arrangement of Bergstrom does not create separate sections. There is no way to square the representations the inventors made about Mourtada, Bergstrom and Hess with respect to separation, with the arrangement in the Bio-Rad accused modules that have electronics adjacent to and on the same side of the panel member as the fluidics. At a minimum, the electronics that Dr. Wereley describes as being embedded in the panel member are the fluidics in the Bio-Rad accused modules, which are not on "either side" of the panel member as the inventors said they must be. Ex. G at 1451 ("The detector module 10 of Fig. 10 illustrates that fluid and electrical parts are adjacent **not on either side of a panel."**)(emphasis added).

(d) Element [1.ix]: "wherein the housing comprises a liquid handling panel with two or more component receiving positions adapted to receive said interchangeable modular components such that, when inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing"

270. Element [1.ix] of claim 1 of the '591 patent requires "wherein the housing comprises a liquid handling panel with two or more component receiving positions adapted to receive said interchangeable modular components such that, when inserted, the fluidics section is external to the housing and the non-fluidics section is internal to the housing."

271. The NGC System does not infringe claim 9 at least because it lacks "wherein the housing comprises a liquid handling panel with two or more component receiving positions adapted to receive said interchangeable modular components such that, when inserted, the

fluidics section is external to the housing and the non-fluidics section is internal to the housing," as claimed.

272. I have discussed why this element is not met with respect to my discussion of elements 1.e and 1.f of the '420 patent. I incorporate those discussions fully for this element.

(e) Claim [1.xi]: "wherein each interchangeable modular component includes a dedicated CPU unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus"

273. Dependent claim [1.xi] requires "wherein each interchangeable modular component includes a dedicated CPU unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus."

274. The NGC System does not infringe claim 9 at least because it lacks "wherein each interchangeable modular component includes a dedicated CPU unit allowing the interchangeable modular component to independently perform operations in response to instructions over the system bus," as claimed.

275. I have discussed why this element is not met with respect to my discussion of element 1.k of the '420 patent. I incorporate those discussions fully for this element.

276. In summary, a person of ordinary skill in the art would not read this limitation to mean that the modular component's cpu does nothing more than take the signal that the master control unit has sent and forward it. For example, if the master control unit sent out a signal that would deliver a certain voltage or current to a module to make it operate at a certain level (*e.g.*, A high or low signal), one of ordinary skill in the art would not read the specification to mean that the CPU would take an instruction and merely create that same current or voltage or simply translate that instruction into a different format.

277. Rather, one of ordinary skill in the art would understand the passage in the specification relating to the use independent operation of the CPU to mean that a signal is received from the master control unit and then the CPU does something above and beyond what that signal indicates and what the MCU would have done on its own, something that is independent of the signal the CPU sent.

2. Dependent Claim 26: "the pH electrode is connected to a pH valve formed as an interchangeable modular component"

278. Claim 26 depends from claim 12, and recites that "the pH electrode is connected to a pH valve formed as an interchangeable modular component."

279. I have discussed why this element is not met with respect to my discussion of element 1.e of the '420 patent. I incorporate those discussions fully for this element.

3. Dependent Claim 27: "the pH valve include[] an integrated flow cell for in-line monitoring of pH levels"

280. Claim 27 depends from claim 26, and further requires that "the pH valve include[] an integrated flow cell for in-line monitoring of pH levels."

281. I have discussed why this element is not met with respect to my discussion of element 1.e of the '420 patent. I incorporate those discussions fully for this element.

E. Non-Infringement of the '124 Patent

1. Element [16.h]: "a panel member arranged to separate the fluidics section from the non fluidics section and for attachment of the modular component to a component position of the liquid handling panel."

282. Element [16.h] requires "a panel member arranged to separate the fluidics section from the non fluidics section and for attachment of the modular component to a component position of the liquid handling panel."

283. The NGC System does not infringe claim 16 at least because it lacks "a panel member arranged to separate the fluidics section from the non fluidics section and for attachment of the modular component to a component position of the liquid handling panel," as claimed.

284. I have discussed why this element is not met with respect to my discussion of element 1.h of the '420 patent. I incorporate those discussions fully for this element.

285. The NGC System does not infringe this element because the NGC System does not include "a panel member arranged to separate the fluidics section from the non-fluidics section" as claimed. I incorporate my discussion of elements [1.e] and [1.f] of the '420 patent for this element. In summary, the electronics in the housing are not a separate non-fluidics section from the electronics Dr. Wereley describes as embedded in the panel member. "Embedding" as shown with the arrangement of Bergstrom does not create separate sections. There is no way to square the representations the inventors made about Mourtada, Bergstrom and Hess with respect to separation, with the arrangement in the Bio-Rad accused modules that have electronics adjacent to and on the same side of the panel member as the fluidics. At a minimum, the electronics that Dr. Wereley describes as being embedded in the panel member are the fluidics in the Bio-Rad accused modules, which are not on "either side" of the panel member as the inventors said they must be. Ex. G at 1451 ("The detector module 10 of Fig. 10 illustrates that fluid and electrical parts are adjacent **not on either side of a panel."**)(emphasis added).

2. Element [16.i]: "wherein the liquid handling panel of the housing and the panel members are arranged such that the fluidics sections are external to the housing and respective non fluidics sections are internal to the housing"

286. Element [16.i] requires "wherein the liquid handling panel of the housing and the panel members are arranged such that the fluidics sections are external to the housing and respective non fluidics sections are internal to the housing."

287. The NGC System does not infringe claim 16 at least because it lacks "the liquid handling panel of the housing and the panel members are arranged such that the fluidics sections are external to the housing and respective non fluidics sections are internal to the housing" as claimed.

288. I have discussed why this element is not met with respect to my discussion of elements 1.e and 1.f of the '420 patent. I incorporate those discussions fully for this element.

3. Element [16.j]: "respective non fluidics sections are internal to the housing"

289. Element [16.j] requires that the "respective non fluidics sections are internal to the housing."

290. I have discussed why this element is not met with respect to my discussion of element 1.f of the '420 patent. I incorporate those discussions fully for this element.

4. Dependent Claim 20: "wherein each of the interchangeable modular components includes a dedicated CPU unit allowing each of the interchangeable modular components to independently perform operations in response to instructions over the bus"

291. Element [20.c] requires "wherein each of the interchangeable modular components includes a dedicated CPU unit allowing each of the interchangeable modular components to independently perform operations in response to instructions over the bus."

292. The NGC System does not infringe Claim 20 at least because it lacks "wherein each of the interchangeable modular components includes a dedicated CPU unit allowing each of the interchangeable modular components to independently perform operations in response to instructions over the bus" as claimed.

293. I have discussed why this element is not met with respect to my discussion of element 1.k of the '420 patent. I incorporate those discussions fully for this element.

294. In summary, a person of ordinary skill in the art would not read this limitation to mean that the modular component's cpu does nothing more than take the signal that the master control unit has sent and forward it. For example, if the master control unit sent out a signal that would deliver a certain voltage or current to a module to make it operate at a certain level (*e.g.*, A high or low signal), one of ordinary skill in the art would not read the specification to mean that the CPU would take an instruction and merely create that same current or voltage or simply translate that instruction into a different format.

295. Rather, one of ordinary skill in the art would understand the passage in the specification relating to the use independent operation of the CPU to mean that a signal is received from the master control unit and then the CPU does something above and beyond what that signal indicates and what the MCU would have done on its own, something that is independent of the signal the CPU sent.

5. Dependent Claim 28 "the system includes two double piston pumps, one injection valve for injecting sample onto a column connecting to the flow path of the liquid chromatography system, a UV monitor, and a mixer"

296. Claim 28 depends from claim 16, and further requires that the system recited there comprise "two double piston pumps, one injection valve for injecting sample onto a column connecting to the flow path of the liquid chromatography system, a UV monitor, and a mixer."

297. I have discussed why this element is not met with respect to my discussion of element 1.e of the '420 patent. I incorporate those discussions fully for this element.

6. Dependent Claim 30: "further includes a pH-valve with an integrated flow cell for in-line monitoring of pH levels, and a quaternary valve for automatic buffer preparation and formation of quaternary gradients"

298. Claim 30 depends from claim 28, which in turn depends on claim 16, and requires that the system "further includes a pH-valve with an integrated flow cell for in-line monitoring of

pH levels, and a quaternary valve for automatic buffer preparation and formation of quaternary gradients."

299. I have discussed why this element is not met with respect to my discussion of element 1.e of the '420 patent. I incorporate those discussions fully for this element.

IX. NON-INFRINGING ALTERNATIVES

300. I have also been asked to opine on the existence of non-infringing alternatives and the relative difficult in creating a non infringing alternative by modifying the accused NGC products. In summary, it is my opinion that non-infringing alternatives, such as the Bio-Rad DuoFlow, exist. That chromatography system was the predecessor to the NGC. Moreover, modifications to the NGC could be designed which would avoid infringement.

301. [redacted]

302. In this regard, Dr. Wereley has his analysis backwards. He states that not having a CPU on each module would result in increased cost and complexity and it is not clear that it

DATED: October 21, 2020

Bruce K. Gale, Ph.D.

EXHIBIT 3

IN THE UNITED STATES DISTRICT COURT

IN AND FOR THE DISTRICT OF DELAWARE

- - -

GE HEALTHCARE BIO-SCIENCES AB, GE HEALTHCARE BIO-SCIENCES CORPORATION, and GENERAL ELECTRIC COMPANY,	:	CIVIL ACTION
Plaintiffs,	:	
vs.	:	
BIO-RAD LABORATORIES, INC.,	:	
Defendant.	:	NO. 18-1899-CFC

- - -

Wilmington, Delaware
Thursday, May 14, 2020
10:30 o'clock, a.m.
***Telephone conference

- - -

BEFORE: HONORABLE COLM F. CONNOLLY, U.S.D.C.J.

- - -

APPEARANCES:

SHAW KELLER LLP
BY: JOHN W. SHAW, ESQ.

-and-

Valerie J. Gunning
Official Court Reporter

doesn't say anything about what is going to be in the fluidics section. It's just saying, hey, look, we have a non-fluidics section. Your prior art does not teach a non-fluidics section. That's the distinction. So that can't arise to a clear and unmistakable disavowal because they are talking about two different things.

What they are saying is, hey, look, you need to move all of the electronics into the, into this non-fluidics section. All they were saying is like, look, what you are pointing to as a non-fluidics section, it's not a non-fluidics section because it has electronic components in it.

THE COURT: But it says, look at slide 59. In Bergstrom, the opposite is taught. Fluid and non-fluidic parts are together, and you are saying, no. You know, because of the definition you want me to adopt, you want a one-way street. You don't want to have reciprocity, so you want to have non-fluidic as defined as not including fluidic, but fluidic sections not defined as barring non-fluidics, and yet --

MR. MILLER: And -- I'm sorry. Go ahead.

THE COURT: And then to overcome the objection, you say in Bergstrom the fluid and the non-fluidic parts are together, which is what you want to have now in the fluidics section.

MR. MILLER: Well, but the entire discussion is about what the Examiner was saying was a non-fluidics section.

So the non-fluidics section --

THE COURT: Show me where it is clear from the prosecution history they are only talking about a "non-fluidic section."

MR. MILLER: Give me a moment, Your Honor.

(Pause.)

MR. MILLER: Are you looking at Exhibit D?

THE COURT: Yes, I'm there.

MR. MILLER: I think if you go to 1477. In the heat of the moment, this is all I can do right now.

THE COURT: Okay. I'm there.

MR. MILLER: At the top there it says, wherein this -- one, two, three, four, five lines down.

THE COURT: Okay.

MR. MILLER: It says, wherein the liquid handling panel, the objects are arranged such that each external fluidics of the unit is separated from its respective modular section by the liquid handling panel. It says it is not disclosed in the prior art.

So, and then they made a claim to say that the fluidics section comprised electronics and electrical components. And I would submit that that is support to us,

right, because electronics components are explicitly recited in the claim.

So that's what they are talking about, there's no electronic components in the fluidics section. They would be crazy to do so because the specification literally describes several examples where there are electronics on the fluidics side.

MR. BILSKER: Your Honor, I apologize for interrupting, but did he say page 1477?

THE COURT: Yes.

MR. BILSKER: Okay.

MS. SKLENAR: Your Honor, if I can just interrupt for a second. This is Ms. Sklenar.

If I could propose a compromise position in order to address some of the comments that Your Honor has made, but also try to get at the issue that I think we're concerned about.

THE COURT: Okay.

MS. SKLENAR: If we could look at Figure 4A, I can give you my proposed compromise with reference to that.

THE COURT: Okay.

MS. SKLENAR: In light of Your Honor's comments, we could agree to construction where there needs to be a fluidics section with only fluidics, and that there needs to

be a non-fluidics section that can't have fluidics, but what we're trying to preserve and carve out is this idea that it's possible that there could be another section somewhere on the module -- you know, not in the fluidics section, but somewhere else. For example, if we look at Figure 4A and you see 28, which was the panel number, what we're trying to prevent is someone from saying, we don't infringe this claim if we have, say, stuck in the panel member 28 some lights. So they'll say, well, there's electronics there and it's not in the non-fluidics section.

So if Bio-Rad's construction is adopted, which says all electronics for the module have to be in the non-fluidics section, they would basically be excluding that configuration from the claim where you got electronics elsewhere but they are not in the fluidics section.

THE COURT: But, see, actually, this is very interesting that you propose this. If you recall, I actually led with the questions that exactly went to this issue, because my first question was about, can you have, do you have to have electronic components in the fluidics section, because I think it's clear that the written description allows for there to be non-fluidic components external to the non-fluidics section. They just, and I think this is a key, they just can't be in the fluidics section.

So basically, what you are saying makes sense to me, I think. Let's hear from Bio-Rad says.

MR. BILSKER: Absolutely not, Your Honor.

THE COURT: Why not?

MR. BILSKER: Because again, it begs the question. What is a section? They want to say you can have a fluidics section, because if I have -- if I have this fluid line here, I will draw a circle around this fluid line and I'm going to call that a fluidics section, and then if I have more fluidics on the side and they're next to electronic parts, I'm not going to call those part of the fluidics section. Those are a different section. And that is completely inconsistent with the representation that they made about Hess.

And let me just -- the reason I asked whether he was pointing to page 1477 is because 1477 is talking about Mourtada. It's not talking about Bergstrom.

And if we go back to the slides on Hess --

THE COURT: No, no. Don't go there yet. Let's just finish up. You see, look, if you've got --

MR. BILSKER: Again, that's not what they claimed.

THE COURT: Just hold on a second, please. I mean, what I understand the compromise is, essentially, if you agree with Bio-Rad, that if you have a non-fluidics

section, there can't be any fluidics in it, and a fluidics section would mean there's no non-fluidics in it.

But could there be, in addition to those two sections, a third section, and you could have a mix. And as I look at claim 1, for instance, of the '591 patent, it has an external fluidics section. It has to have one. It has to have an internal non-fluidics section. So both of those sections would have to exist and would have to have in one case, the fluidics section, no non-fluidic component. In the second case, the non-fluidic section could not have any fluidic component.

And then it has to have a separate section, which is something distinct and different and is not within those two sections, and Bio-Rad here is saying you can't live with that.

MR. BILSKER: Absolutely not. Again, it begs the question. What is the section at that point? So I have a module and I have an outside part of it and I'm going to split it up into little, little piles, and I'm going to say, hey, I've actually got 45 different sections here on this module, 45 different sections on the outside. You know, I don't -- there's a bunch of electronics, but they're all on the top half. So because they're on the top half, I'm going to call only the bottom half my fluidics section and I'm not going to call the top half my fluidics section, and that's

just not what they said during the prosecution. The section was defined as all parts of that type, and that's again, if we go through slide 58, 59 --

THE COURT: But I guess what I'm getting at it is, I think, GE, would you agree then, would you agree to Bio-Rad's construction?

MS. SKLENAR: No, because our issue with their construction is that it says essentially all electronics for the module, for the entire module have to be in a non-fluidics section. And, again, that would allow --

THE COURT: Fair enough. So what if it just said though, a section -- yes. I mean, you know, here's where I am. I will just tell you right now.

So I'm not able to accept GE's position that on one hand a non-fluidic section can contain fluidics. On the other hand, a fluidics section cannot contain non-fluidics. On the other hand, the patent uses the indefinite article, so it contemplates one or more sections, and the Federal Circuit has said, understandably, that the indefinite article does not mean all.

So that is what I find problematic about Bio-Rad's construction, is they want to say all the fluidic components.

MS. SKLENAR: Yes. I apologize.

THE COURT: That's all right. You know, but GE,

you know, I can't live with the way you want to interpret it.

MS. SKLENAR: Yes. If we can put all of our cards on the table.

THE COURT: Well, that's helpful.

MS. SKLENAR: The reason we're fighting about this is because Bio-Rad wants to argue for noninfringement that they have some electrical components like lights that are in the panel member, so neither of the sections we're talking about, the fluidics or non-fluidics, but are in the panel member.

So, for example, what we see in Figure 4A at 28, they want their construction so they can then turn around and say, we don't infringe because we don't have all of our electrical components in one section. And what we're submitting -- and, again, we are modifying our approach. We are willing to agree that a fluidics section cannot have electronics or electrical components, but what we can't live with is this notion that somehow you could get outside of the scope of this claims by putting little lights in a different section.

THE COURT: But that is not before you. Right? You kind of did an all-or-nothing in your proposal. I mean, it seems to me you could have been more judicious in the proposal and then left this issue for trial and figure it

out.

So why don't we just step back and let's go with, I'm looking at page 94 of your brief where we've got the competing construction proposals for fluid handling section. Right? And you've got a section of the interchangeable fluid handling unit that includes fluidics components.

So why don't you just change that to be consistent with your construction of a non-fluidic section and say that this would be a section of the interchangeable fluid of the interchangeable fluid handling unit that does not include electrical components.

MS. SKLENAR: And we're willing to do that, Your Honor. It's the all issue we can't live with.

THE COURT: Okay. But, you know, then that's fair and I think that's a legitimate complaint. So here's where I am. That's how I'm going to interpret these terms.

I'm going to interpret non-fluidics section to mean, "a section of the interchangeable fluid handling unit that includes electrical components and does not include fluidics components."

I'm going to construe a fluid handling section to mean, "a section of the interchangeable fluid handling unit that includes fluidics components and does not include non-fluidics components." And that seems to me to be the

most reasonable construction. That is consistent with what I think were clear and unequivocal statements to distinguish this patent from Bergstrom and Hess, because the basis of the distinctions to the Patent Examiner were that this patent had two sections that, at least two sections, one is non-fluidic, one is fluidic, that are separated completely and that do not contain components of the other section.

That does not, however, preclude the possibility that there are other sections that are in the invention, and that's important because that is consistent with the use of the indefinite article, which is inconsistent with Bio-Rad's insistence that "all," either fluidic or non-fluidic components, are in the respective handling unit.

So that actually seems to me is the right result in this case and I'm going to construe then these last group of terms in that manner.

All right. Is there anything else for me to construe?

MS. SKLENAR: Nothing from plaintiff, Your Honor.

MR. BILSKER: Mr. Bilsker. None.

THE COURT: Okay. I'm going to ask the plaintiff to submit within a week from today a written order of the claim chart and the basis of my rulings are set forth in today's telephone conference.

I read the briefs carefully. I've articulated the general basis of my rulings. I'm cognizant that there's de novo review in the Federal Circuit, so that really no matter what I say has really no consequence, but I appreciate the briefing and the arguments of the parties today. And if you will just submit that order that is consistent with my rulings today within a week, I will sign it forthwith.

Anything else from the plaintiffs?

MS. SKLENAR: Nothing, Your Honor. Thank you so much for your time.

THE COURT: Anything from the defense?

MR. BILSKER: I was just curious about the transcript, but I guess we can handle it.

THE COURT: What do you mean?

MR. BILSKER: Whether we would get the transcript just to make sure that the order is consistent with the transcript. I was having a little trouble writing as quickly as you were speaking.

THE COURT: Well, let's actually, before we leave, where is there any ambiguity in what I've ruled on in your mind?

MR. BILSKER: I don't think there's ambiguity. I just didn't have the exact words that you said. I didn't get a chance to write them down exactly. Maybe my associate

did. That's all I was saying.

THE COURT: No, that's fair. And, really, I think the big point is, it is kind of the thing that disturbed me from the beginning with the plaintiffs' argument, is on those last two, the fluidics and the non-fluidics, I just interpreted it as far as I'm concerned in a manner that's consistent, and I think that Bio-Rad even agreed insofar as it being consistent. That's the big distinction there.

So, okay. If because of the current situation you need more time to get the order in, to get the transcript ready, that's fine, but at least as of now we'll set it for a week from today, and the obligation will be on plaintiffs to submit the proposed claim construction order. Okay?

Everybody have a great day. Stay safe. Thanks very much. Bye-bye.

(Counsel respond, "Thank you, Your Honor.")

(Telephone conference concluded at 1:12 p.m.)

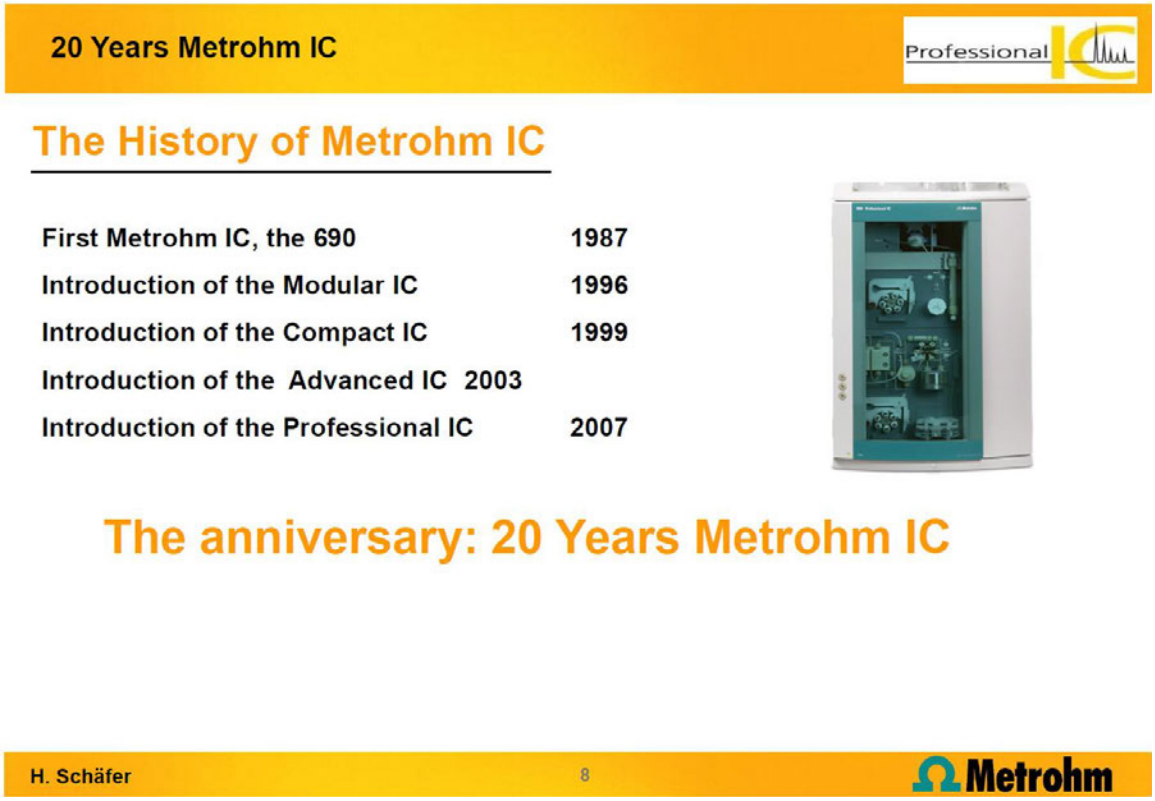
- - -

EXHIBIT 4

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

CYTIVA SWEDEN AB, and GLOBAL LIFE SCIENCES SOLUTIONS USA LLC, Plaintiffs v. BIO-RAD LABORATORIES, INC., Defendant.	C.A. No. 18-1899-CFC Consolidated **DEMAND FOR JURY TRIAL** **HIGHLY CONFIDENTIAL (TECHNICAL) – ATTORNEYS' EYES ONLY**

OPENING EXPERT REPORT OF DR. BRUCE GALE



293. Notably, Metrohm shifted to a modular ion chromatography system design in 1996, only 9 years after releasing their first ion chromatography system in 1987 and 12 years before the priority date of the Asserted Patents. Metrohm discusses considerations any system designer would take into account in opting to go with the design choice of a modular system. For example, Metrohm explained that a "compact instrument with modular structure" is desirable and that customers would benefit from such a design. *See id.* at 10-11. Specifically, the modularity benefits the customer by providing: "High flexibility – the user gets a customized instrument," "The instrument can be updated for other applications," and "The customer is not paying for items he doesn't need." *Id.* at 13. And the compactness of it benefits the customer by providing: "All in one housing," "No numerous instruments to combine with a lot of different cables," and "Ready to use." *Id.* at 14.

C. The 2040 System

294. The ADI 2040 Process Analyzer ("2040 System") was developed by Applikon Analytical in the late 1990s. The ADI 2040 was marketed and sold by at least August 1999. Declaration of Thomas Koshy ("Koshy Dec.") ¶ 4. During his deposition, Metrohm witness Mr. Thomas Koshy testified that the 2040 System was released in 1999, and the sold-analyzer list discussed during the deposition shows the 2040 System was sold in the U.S. since 1999. Metrohm Tr. at 107:6-109:24; 154:7-12; Metrohm Dep. Exh. 7 (excerpted below).

Analyzers 1999-2008
Applikon Analyzers Confidential
7/8/2015
Consolidated 1999-2008

END-USER Code	PLACE	ANALYZER	Year Sold
customer 63	MN	ADI 2040	2003
customer 64	FL	ADI 2040	2003
customer 65	OH	ADI 2040	2003
customer 66	TX	ADI 2040	2003
customer 67	LA	ADI 2040	2003
customer 68	NJ	ADI 2040	2003
customer 69	TX	ADI 2040	2001
customer 70	LA	ADI 2040	2001
customer 71	TX	ADI 2040	2001
customer 72	LA	ADI 2040	2001
customer 73	TX	ADI 2040	2001
customer 74	Canada	ADI 2040	2000
customer 75	NY	ADI 2040	2000
customer 76	TX	ADI 2040	2000
customer 77	LA	ADI 2040	2000
customer 78	NY	ADI 2040	2000
customer 79	OH	ADI 2040	2000
customer 80	OH	ADI 2040	2000
customer 81	NY	ADI 2040	2000
customer 82	LA	ADI 2040	2000
customer 83	CA	ADI 2040	1999
customer 84	TX	ADI 2040	1999
customer 85	OR	ADI 2040	2004
customer 86	AZ	ADI 2040	2007

295. No changes were made to the hardware in the 2040 System over the time period from 2002 to 2008. Metrohm Tr. at 154:13-19. The 2040 System is therefore prior art to the patents-in-suit at least under 35 U.S.C. § 102(b).

296. The 2040 System documentation I cite in this report thus describes the 2040 System that was first sold in August 1999. The ADI 2040 Process Analyzer brochure from September 2008 ("ADI 2040 Brochure") that describes the ADI 2040 Process Analyzer, was available for download at least as early as September 2008. Koshy Dec. ¶ 7.

297. The 2040 System "is a multipurpose wet chemical analyzer, that has been designed to offer flexibility and withstand the harshest environments" and "makes use of proven analytical techniques, like titration, colorimetry and dynamic standard addition with ion selective electrodes." (2040 Brochure at BRGE00001521.) The 2040 System includes a multitude of "wet part modules" that are used for automated liquid handling as shown below.

(*Id.* at BRGE00001521.)

298. The wet part or fluid handling sections of the modules are on the external side of the housing and include the blue colored tubing for carrying fluids, while the electronics sections of the modules and the electronics for the system is inside the housing as shown below.

(2040 Brochure at BRGE00001521-22; *see also* 2040 Manual at BRGE00003266-67.[120])

299. I have inspected and analyzed a 2040 System that I have in my laboratory. I also performed tests to show the 2040 System can deliver controlled fluid flow to and through a liquid chromatograph column and which I consider an automated liquid chromatography system capable of performing automated liquid chromatography. The tests are described in the test report, attached as Exh. 4. I recorded videos of these tests showing the 2040 System performing liquid chromatography. A video of the test conducted on November 12, 2016 is attached as Exh. 5 and a video of the test conducted on November 14, 2016 is attached as Exh. 6. An edited version of the video for the November 12, 2016 test is attached as Exh. 7, and an edited version of the video for the November 14, 2016 test is attached as Exh. 8. I may choose to rely on all or parts of these videos in my trial testimony

D. The 850 System

[120] Although I cite to the version of the 2040 Manual labeled BRGE00003253, the same disclosures I rely on can be found in the version of the same document produced as BIO-RAD-000001, which was used as Exhibit 6 at the Metrohm deposition. See Metrohm Tr. at 102:11-105:25 (also testifying that there were no major hardware changes to the 2040 System from 2008 until 2015).

DATED: September 14, 2020

Bruce K. Gale, Ph.D.

EXHIBIT 4

Test Report 11-14-16

We performed a chromatography separation of 5 food dyes simultaneously on the Applikon instrument. The separation was complete and appeared to be a baseline separation between the dyes. The separation results were also reproducible with the centers of each of the dyes eluting at the same times. Each test was performed on different days spanning an 11 day period. The results were also reproducible after switching the positions of two of the fluidic components within the Applikon instrument.

Instrument Programming Details

The goal of the programming was to reproduce the steps of a dye chromatography experiment. The shared stirrer for PBS and methanol mixing was the sole supply of fluid to the 5mL/min peristaltic pump that was pumping the elutant through the C18 chromatography column. Figure 1 shows all the various pumps, valves and stirrers that were programmed to perform the experiment, the names on the labels will be used throughout the programming description. All the programming was performed on the instrument using the built-in keypad and function buttons. Any pump or valve that is not labeled in the figure was not required for the chromatography experiments that we performed.

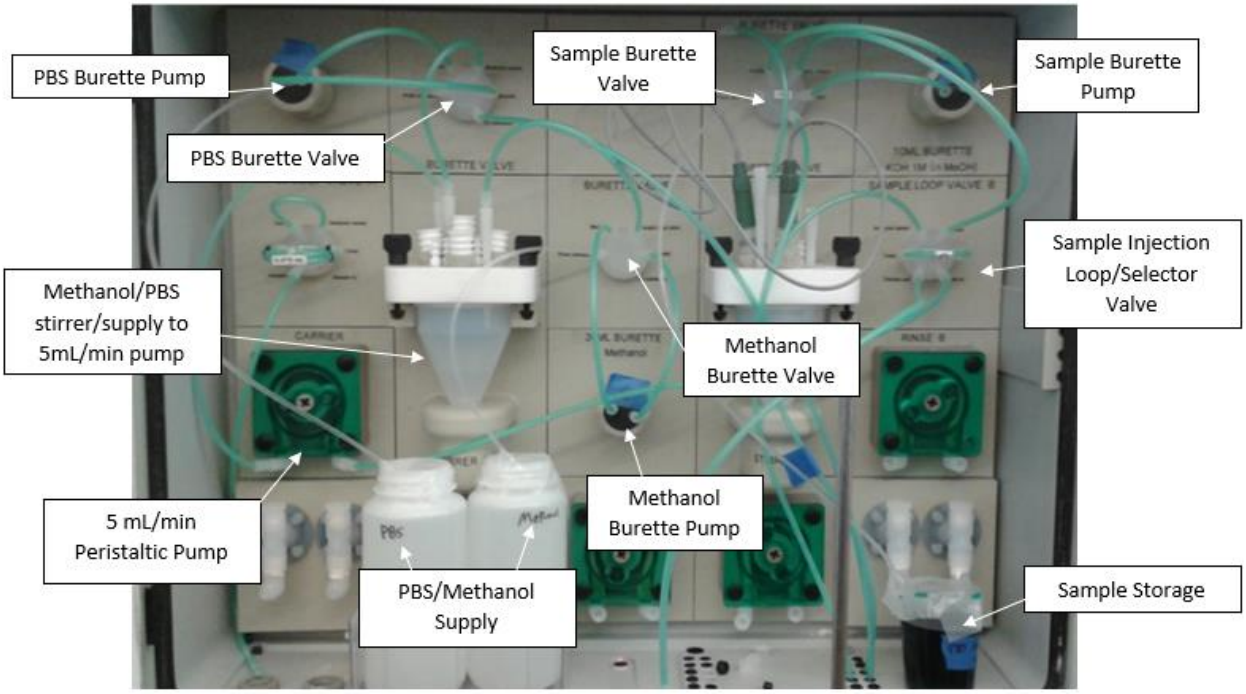


Figure 1. Initial layout of fluidic components in the Applikon instrument for performing chromatography in Tests A, B, and C.

The first step in the program was a flush of the sampling column using 100% methanol to ensure that all contaminants were flushed out of the column. To perform the flush 40 mL of methanol was pumped from the methanol supply into the stirrer/supply reservoir using the methanol burette pump. Due to the 20 mL capacity of the burette, this required the burette to fill and dispense twice. After the methanol was pumped into the supply reservoir, the 5mL/min peristaltic pump was switched on and the methanol was drawn from the reservoir and pumped to the sample injection valve which was set in the

"on" position. In the "on" position the fluid from the peristaltic pump bypasses the sample loop itself and flows straight into the chromatography column.

After pumping pure methanol through the column, the next step was to return the fluid in the column to 50% PBS. This was easily achieved by adding 30 mL of PBS and 15mL of methanol to the reservoir which had 15mL of methanol remaining after flushing the column. Of the 60 mL of the 50/50 methanol mix, 45 mL was pumped through the column (the equivalent of three times the volume of the column). After the 50/50 mix was pumped through the column, the next step was to return the fluid in the column to 100% PBS before adding the sample. This was achieved by adding PBS to the stirrer 15mL at a time six times while the peristaltic pump continued to pump through the column. The result of this step left the fluid in the column as <1% methanol, which we considered to be acceptably close to 100% PBS for our purposes.

While the column was being returned to 100% PBS the sample was prepared for injection into the column by pumping 10 mL of the dye into the sample loop selector valve using the sample burette pump. The volume of the loop is only 0.5 mL however a much larger volume was pushed through the loop to ensure that the sample loop contained only the sample. The sample loop is filled while the valve is in the "on" position. In the "on" position, fluid pumped by the sample burette flows through the sample loop and passes directly to the sample waste reservoir. Once the sample was pumped into the loop and the column was filled with 100% PBS, the loop valve was switched to the "off" position. This allowed the 5mL/min peristaltic pump to pump the elutant through the sample loop to push the sample in the loop into the column. The elutant at this point was changed to 10% methanol by adding methanol and PBS to the stirrer while the peristaltic pump was switched "off".

The next phase of the experimental program was the methanol gradient, which incrementally increased the concentration of methanol from the starting concentration of 10% to the final concentration of 75% over 40 minutes. To ensure the correct concentrations, the starting volume of 10% methanol was fixed at 40mL and that volume was maintained throughout by adding 5mL of a combination of PBS and methanol every minute to compensate for the amount being pumped every minute by the peristaltic pump.

After the completion of the methanol gradient the methanol concentration was increased to 100% by adding methanol to the stirrer 15mL at a time while continuing to run the peristaltic pump. This was repeated several times until the concentration of methanol was sufficiently high to ensure that all contaminants were flushed from the column and the fluid in the column was 100% methanol. At this point, the flows were turned off and the cap was placed over the exit of the column to store it until the next test.

Flow Path Description

The flow path of the various fluids through the instrument are shown in the following figure. The color code for each fluid is as follows: Green is used to show the flow path of the pure PBS, red is used to show the flow path of pure methanol, orange is used to show the flow path of the elutant which can be PBS, methanol or some combination of the two depending on the point in the chromatography program and black is the sample flow path of the sample when the sample loop valve is in the "on" position (the only difference in the "off" would be that the loop itself would be orange instead of black indicating that the elutant from the peristaltic pump is flowing through the loop). The blue arrows in the figure are

used to show the direction of the flow in each piece of tubing. It should be noted that any piece of tubing that is not one of the colors mentioned above is not used in this experiment.

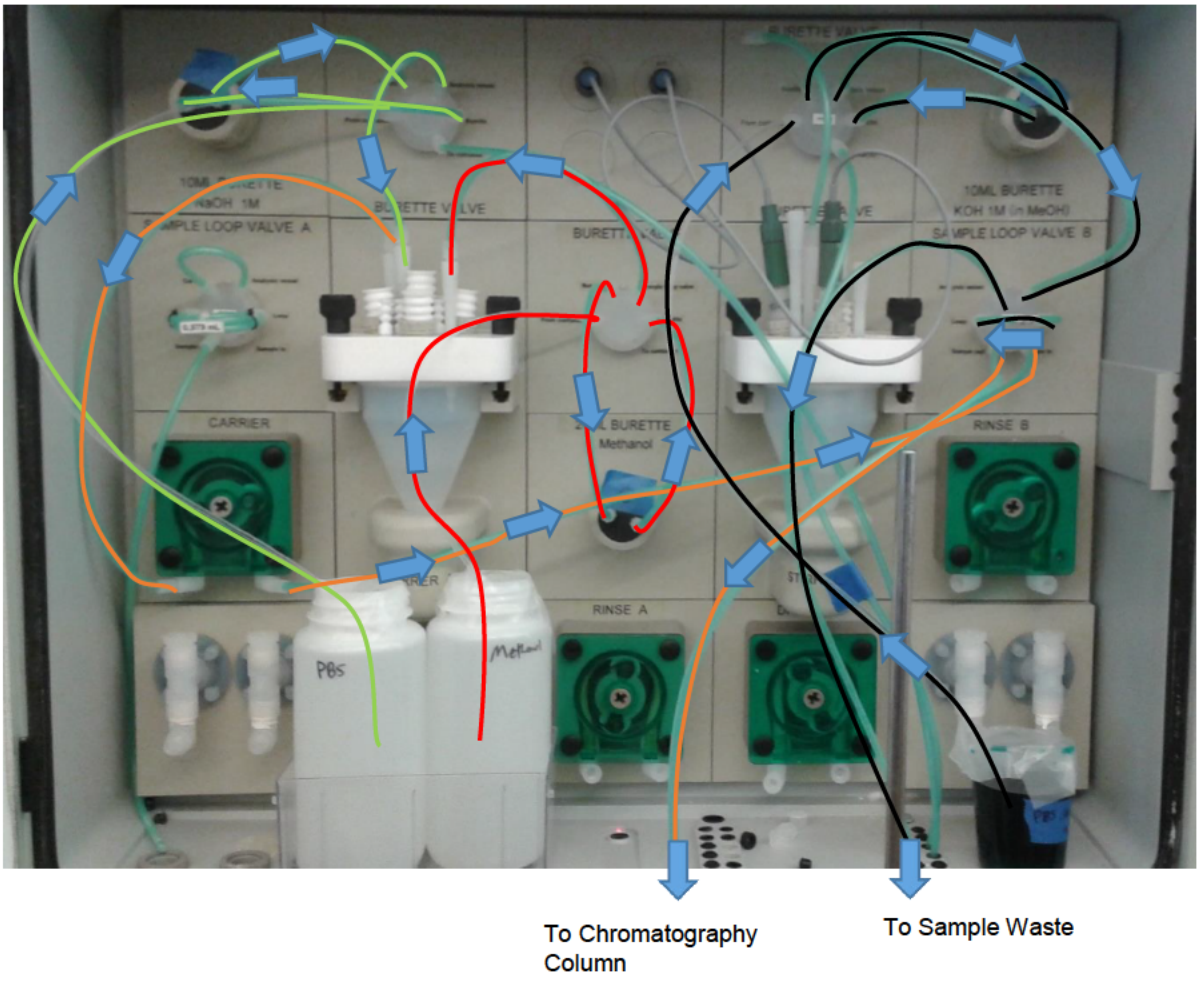


Figure 2. Instrument Flow Path Diagram

Chromatography

The initial sample was a combination of 5 food dyes dissolved in 1X PBS buffer at pH 7.3. The first test used a sample with small and varying concentrations of each dye. In the second test, each dye was .02% in 1X PBS by weight (See Table 1). We programmed the Applikon instrument to prepare the column with a variety of flushes, then load the mixed sample, and finally gradually increase the percent methanol in the elutant buffer for a completely automated process with no hands-on processing. Specifically, we used one burette pump with sample loop to inject a precise amount of sample to the column. We used the other two burette pumps and valves to add varying amounts of methanol or 1X PBS to the stirrer/supply vessel. The stirrer/supply vessel mixed the incoming volumes to produce a smooth steady gradient that was continuously pumped out through the peristaltic pump, and through the sample loop valve to the column. We collected the fractions off the column manually because we did not have an autosampler to collect them for us. The name of the routine that we programmed using the display and interface that was provided native to the Applikon instrument was called “chrom test2”

All components used came with the Applikon instrument as it was delivered to us. The device is designed to suit particular processes and applications and as received it was suited for higher flow rates than we needed. We purchased a different peristaltic pump from Applikon that was rated for smaller flows to make it more compatible with lab-scale chromatography systems. We also used new peristaltic tubing since we did not know the condition of the peristaltic tubing itself. To perform the chromatography, we used a common C18 chromatography column (Biotage part # FSL0-1118-0012), and an adapter (Idex Health& Science part # P-650) to connect the tubing from the Applikon instrument to the column. All food dyes were purchased from (Flinn Scientific part # AP7375).

The hands-off program clearly separated the 5 food dyes from each other with what appears to be a baseline separation between them. Test A was performed on 11-3-16 with a mixture containing only a small concentration of each of the food dyes, then in Test B (performed 11-4-16), the concentration of mixed food dyes was increased for better visibility in the photographs and also to show reproducibility. Test C (11-11-16) was a repeat of Test B, and was filmed from start to finish. In Test D (11-14-16), several physical components of the Applikon system were switched relative to the previous 3 tests. Specifically, the “sample loop valve B”, and the “rinse B” peristaltic pump were switched and also the “carrier” peristaltic pump, and the “sample loop valve A” were switched in the instrument. After switching these components, and the same chromatography was performed a 4th time. Test D showed that two of the various subcomponents could be easily switched in about 10 minutes time, and the chromatography results after the switching were unaffected. The entire chromatography separation process was filmed for Test C. The switching of the “carrier” peristaltic pump, and the “sample loop valve A” and the immediate Test D that followed was also filmed.

In Tests A, B, C, and D the vials were numbered and collected at the same time so that the vial number would be directly comparable in each of the other tests. Because manual collection times were not identical for each collected tube (some were 50 seconds and others 60 etc.), some tubes ended up with more volume than can be capped without spilling. Capping was useful to photograph all the eluted dyes in a single image so some of the liquid from the tops of some tubes was poured or pipetted out to allow capping and subsequent photographing. Below is a summary of the results shown in Table 1 and Figures 3-6. The results are quite reproducible with each of the 5 colored peaks eluting at the same times in all four tests.

Table 1 Description of individual dyes present in the separated mixture and listing the vial and corresponding elution time for each dye present.

	Test A mixture (initial wt. % dye in 1X PBS)	Test B mixture (initial wt. % dye in 1X PBS)	Test C mixture (initial wt. % dye in 1X PBS)	Test D mixture (initial wt. % dye in 1X PBS)	Center of peak (vial #)	Center of peak elution time (minutes)
Yellow 5	0.0077	0.02	0.02	0.02	6-7	51.1
Yellow 6	0.0084	0.02	0.02	0.02	14-15	58.1
Red 40	0.0024	0.02	0.02	0.02	18-19	101.6
Blue 1	0.0038	0.02	0.02	0.02	24-25	107
Red 3	0.002	0.02	0.02	0.02	34-35	116.5

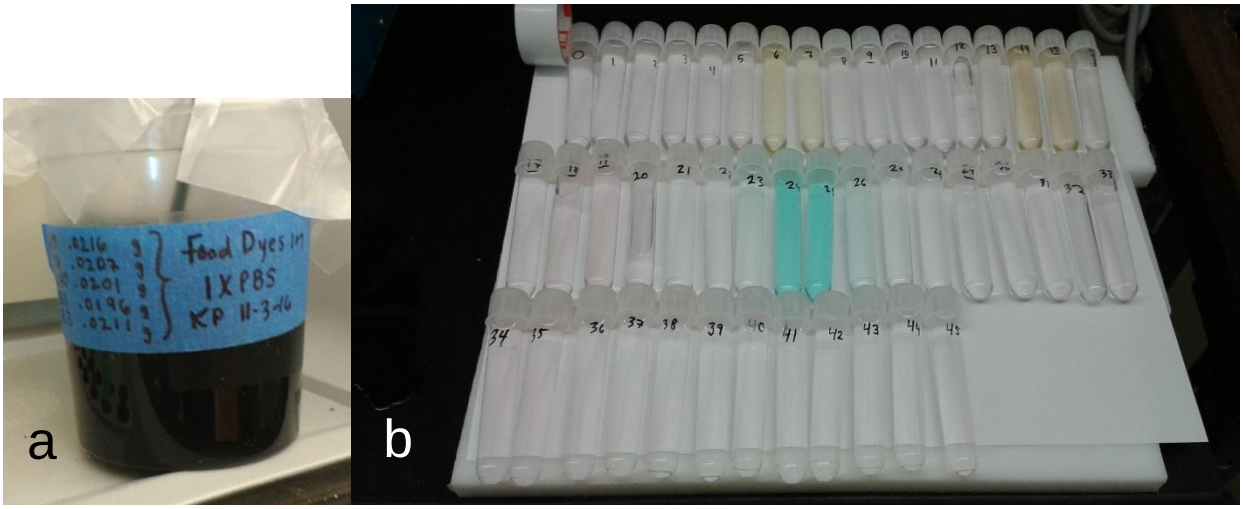


Figure 3. Test A at low dye concentration. a) starting mixture of dyes. b) separated dye by fractions collected. The centers of each peak of eluted colors were at vials 6-7, 14-15, 18-19, 24-25, 34-35.

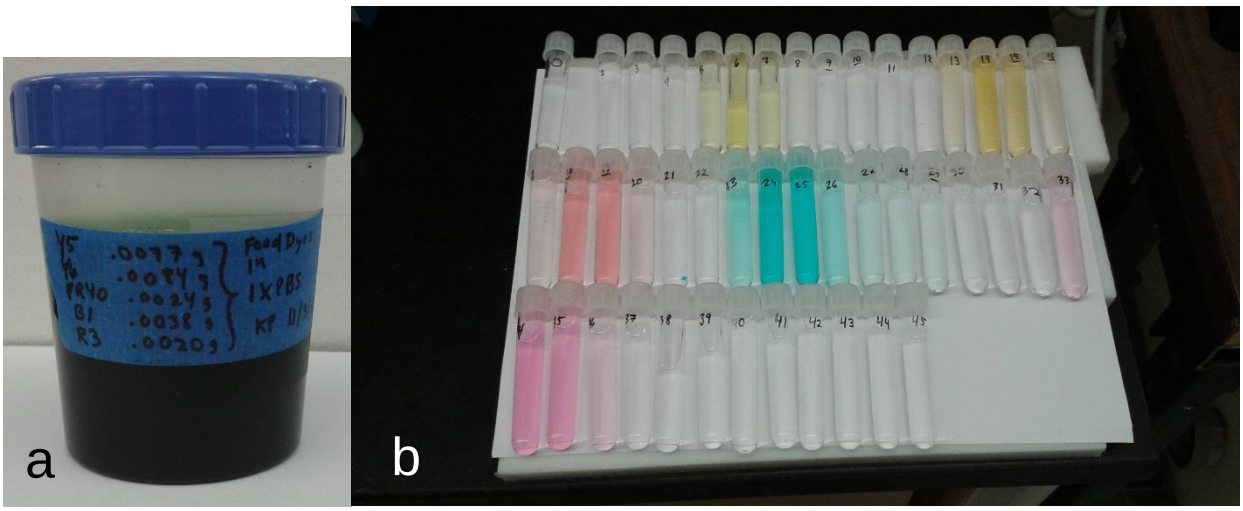


Figure 4. Test B at higher dye concentration. a) starting mixture of dyes. b) separated dye by fractions collected. The centers of each peak of eluted colors were at vials 6-7, 14-15, 18-19, 24-25, 34-35.

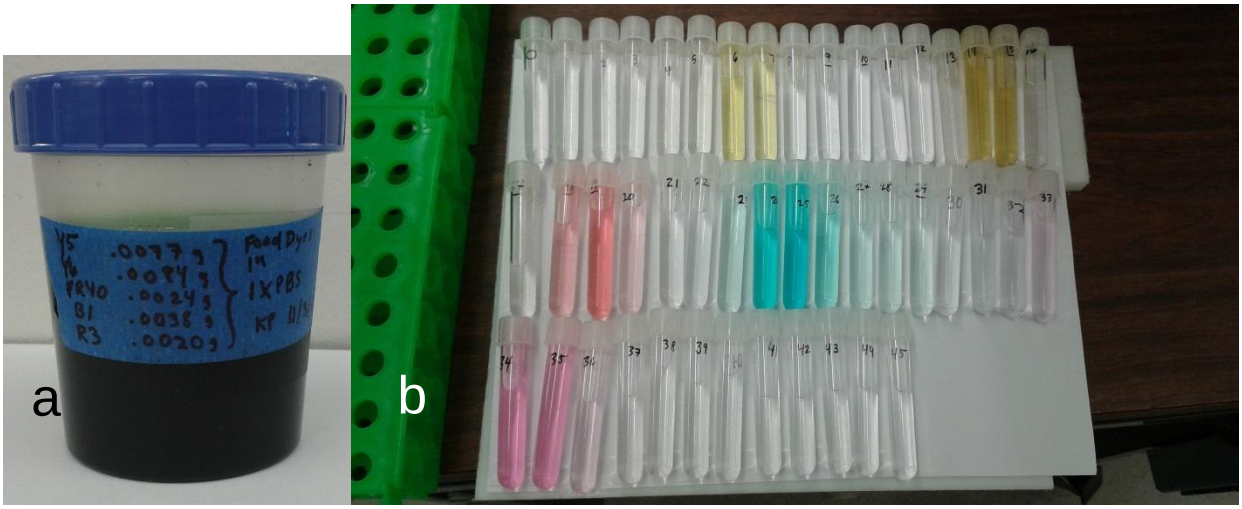


Figure 5. Test C at higher dye concentration. a) starting mixture of dyes. b) separated dye by fractions collected. The centers of each peak of eluted colors were at vials 6-7, 14-15, 18-19, 24-25, 34-35.

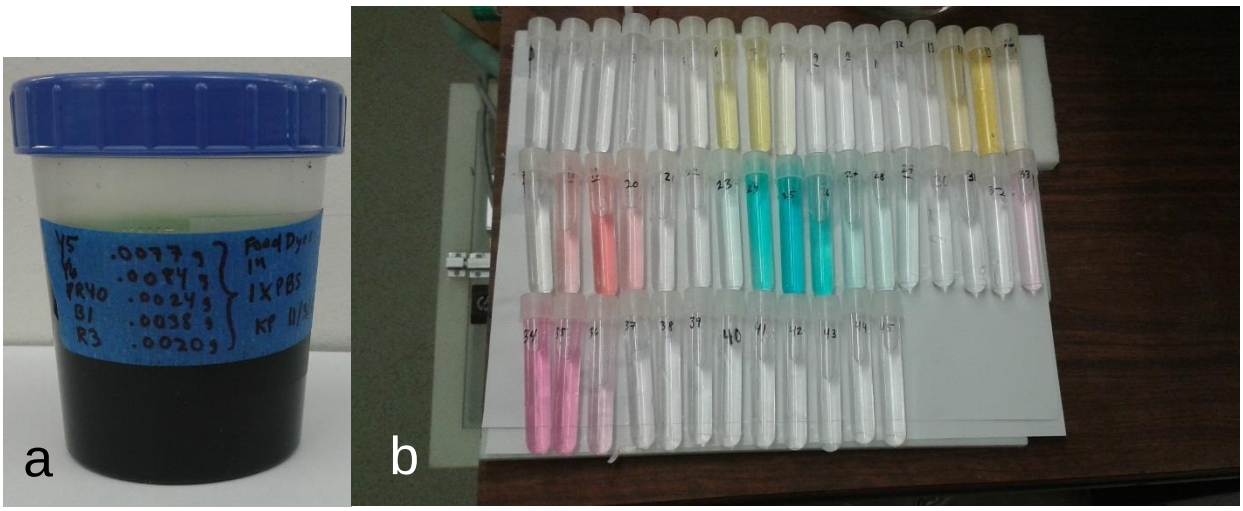


Figure 6. Test D at higher dye concentration and after switching instrument components. a) starting mixture of dyes. b) separated dye by fractions collected. The centers of each peak of eluted colors were at vials 6-7, 14-15, 18-19, 24-25, 34-35.

The colors of each individual dye as diluted in 1X PBS match the hues found in the fractions collected after chromatography. Each dye also elutes in the order expected based upon the results of others who have separated food dyes on C18 columns under similar conditions.

Figure 7. Individual dilutions of dry dye powders in 1X PBS from left to right: FDC Yellow #5, FDC Yellow #6, FDC Red #40, FDC Blue #1, FDC Red #3.

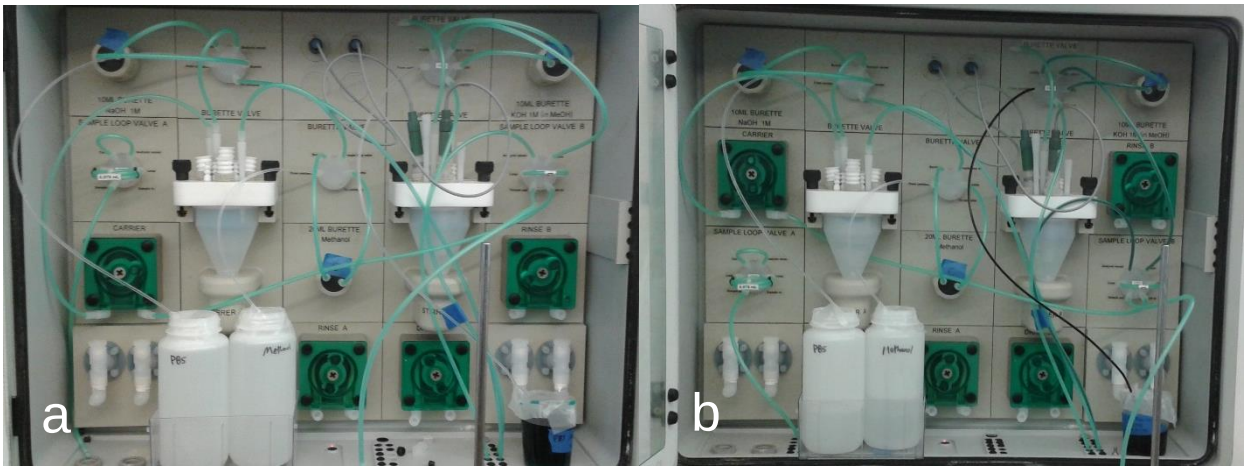


Figure 8. Fluidic components for chromatography. a) layout for the first three tests (Tests A, B, C). b) layout for the last test (Test D). Note the switched location of “carrier” peristaltic pump, and the “sample loop valve A”. We also switched the location of “rinse B” peristaltic pump and “sample loop valve B” but this was not filmed.

EXHIBIT 5

FILED UNDER SEAL

IN THE UNITED STATES DISTRICT COURT

FOR THE SOUTHERN DISTRICT OF NEW YORK

GE HEALTHCARE BIO-SCIENCES AB, GE HEALTHCARE BIO-SCIENCES CORPORATION, and GENERAL ELECTRIC COMPANY,

Plaintiffs,

Civil Action No. 1:14-cv-07080-LTS-SN

vs.

BIO-RAD LABORATORIES, INC.,

Defendant and Counterclaim Plaintiff.

_ _ _ _ _ _ _ _ _ _ _ _ _ /

VIDEOTAPED DEPOSITION OF METROHM 30(b)(6)
(LARRY TUCKER and THOMAS KOSHY)
Tampa, Florida
August 10, 2015

REPORTED BY:
RHONDA HALL-BREUWET
RDR, CRR, LCR, CCR, FPR, CLR
NCRA Realtime Systems Administrator

Job No.: 10018443

A. Yes.

Q. Is that an accurate statement?

A. Yes.

Q. So sitting here today, you don't have any information about whether the ADI 2040 has been used for liquid chromatography; is that right?

A. So yes, I have no records reflecting that the 2045 VA or TI have been used for ion chromatography in the U.S.

Q. Have you ever heard that the 2040 or 2045 was used for liquid chromatography?

A. No, I have not. I'm aware of -- I've heard talk of projects where other process analytical groups globally have sold units for ion chromatography online, but I don't have the details as to whether they specifically used the 2045 VA or TI.

Q. I'm sorry. You said you've heard that units were sold for ion chromatography?

A. That's correct. We have typically a yearly meeting, and I had seen a presentation where someone had sold a system for ion chromatography. I don't recall if it was based on the 2045 VA or TI.

Q. And do you know what system that was?

A. I do not know. It may have been built on

MR. DAVIS: Objection. Form.

THE COURT REPORTER: I'm sorry. For what? I didn't hear the end of your question.

MS. SKLENAR: I asked if he had ever seen internally a 2040 or 2045 system used for liquid chromatography applications.

MR. BILSKER: Objection. Compound.

MR. DAVIS: And I objected to the form.

MS. SKLENAR: I'll break it up.

BY MS. SKLENAR:

Q. Have you ever seen a 2040 be used for liquid chromatography, within your company?

A. Not within the U.S., no, I haven't seen that.

Q. Have you seen it be used anywhere for liquid chromatography, the 2040?

A. I've seen -- no, not with the 2040.

Q. Have you seen the 2045 VA be used for liquid chromatography?

MR. DAVIS: Same objection. You can answer.

THE WITNESS: No, I have not, not in the U.S.

BY MS. SKLENAR:

Q. You say "not in the U.S." Have you seen it be used anywhere, the 2045, for liquid

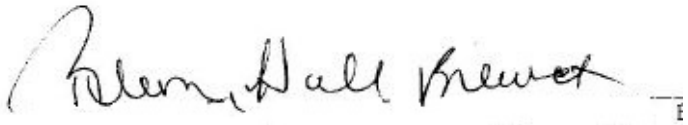
CERTIFICATE OF OATH

STATE OF FLORIDA

COUNTY OF HILLSBOROUGH

I, the undersigned authority, certify that METROHM 30(b)(6) personally appeared before me and was duly sworn.

WITNESS my hand and official seal this 14th day of August, 2015.



Rhonda Hall-Breuwet, RDR, CRR, LCR, CCR, FPR, CLR
NCRA Realtime Systems Administrator
Notary Public - State of Florida
My Commission Expires: 9/28/15
Commission No. EE 117263

REPORTER'S CERTIFICATE

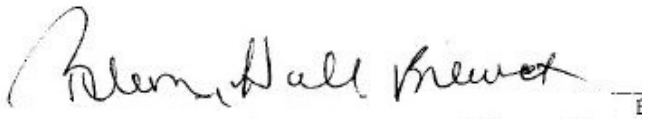
STATE OF FLORIDA

COUNTY OF HILLSBOROUGH

I, Rhonda Hall-Breuwet, RDR, CRR, LCR, FPR, CLR, NCRA Realtime Systems Administrator, Notary Public, certify that I was authorized to and did stenographically report the deposition of METROHM 30(b)(6); that a review of the transcript was requested; and that the transcript is a true and complete record of my stenographic notes.

I further certify that I am not a relative, employee, attorney, or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

Dated this 14th day of August, 2015.



Rhonda Hall-Breuwet, RDR, CRR, LCR, CCR, FPR, CLR
NCRA Realtime Systems Administrator

EXHIBIT 6

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CYTIVA SWEDEN AB, and GLOBAL LIFE SCIENCES SOLUTIONS USA LLC, Plaintiffs v. BIO-RAD LABORATORIES, INC., Defendant.	C.A. No. 18-1899-CFC Consolidated **DEMAND FOR JURY TRIAL** **HIGHLY CONFIDENTIAL (TECHNICAL) – ATTORNEYS' EYES ONLY**

REPLY EXPERT REPORT OF DR. BRUCE GALE

controlled fluid flow to a column, that separates components in a liquid, as I showed in my experiments.

35. Next, Dr. Wereley claims the court rejected the definition of a liquid chromatography system that I have been using. He provides no citation for that claim. I can address it if he does.

36. In any event, as I described in the prior paragraphs and in my opening report, the 2040 System does have detectors of the same type as mentioned in the asserted patents. Nor is it of any moment that some of the detectors in the 2040 System require calibration as Dr. Wereley claims is a basis for distinguishing the 2040 System. Wereley ¶ 325. There is no description in the asserted patents for how the detectors must function and certainly nothing that excludes something from being a detector simply because it must be calibrated. I understand that it is improper to read limitations into the claims from the specification and that it is even more improper to create limitations that are not even mentioned in the specification and import those into the claims. Thus, the need to calibrate a sensor does not disqualify it from being a detector under the asserted patents. If it does, detectors in the Bio-Rad accused systems would have to be disqualified. I confirmed with Ms. Schaefer, one of the Bio-Rad specialists in the NGC, that [redacted]. The same is true of the AKTA systems. *See e.g.*, GEHCDEL123052 at GEHCDEL123222 ("If pH will be measured during the chromatographic run, the pH monitor should be calibrated before the run is started.").

37. Next, Dr. Wereley claims that the 2040 System is not an automated liquid chromatography system because before running chromatography on the instrument, a significant amount of advanced planning went into the run like calculating salt and buffer concentrations, identifying a starch that would absorb the dyes and determining the concentration of methanol.

Wereley at ¶¶ 333, 339. It is difficult to understand Dr. Wereley's argument. The fact that calculations had to be done before performing the chromatography to determine what buffers to use, what kind of column to use and what liquid constituents to use to illustrate the separation that the 2040 System liquid chromatography system would perform does not mean it is not a liquid chromatography system. It simply means that the parameters of that particular separation had to be determined. I do not consider the time spent on the calculations to be anything out of the ordinary. In fact, the system was able to perform liquid chromatography quite easily. Dr. Wereley fails to consider that when workers buy machines now, they usually have field service representatives who have used the particular machines hundreds if not thousands of times come on site to teach the user how to use the machine. That did not happen here. Rather, we were able to figure out how to use the machine relatively easily simply from reading the manual. Moreover, many if not all of the same type of calculations would have to be performed even if using the Bio-Rad or Cytiva machines. I confirmed this with one of Bio-Rad's field specialists, Katie Schaefer. Ms. Schaefer told me that she had experience as a graduate student using the Akta machines as well as extensive experience using the NGC. Mr. Schaefer confirmed what I understood, and what is known by anyone of ordinary skill who actually performs chromatography on an instrument, that the first time you run a particular LC separation experiment, you will have to do the types of calculations we did to determine buffers, concentrations flow rates, column material etc. That is as true for the Plaintiffs' Atka machines and, Bio-Rad's accused machines as it is for the 2040 System prior art system.

38. If Dr. Wereley actually believes that one could approach a Plaintiff or accused machine the first time running an experiment and somehow type in what you wanted to do and then hit a button and have the machine run, he is clearly mistaken. On the Bio-Rad machine, for

example, the only information that is calculated on its own relates to the columns. If you identify a column for use which happens to have been preloaded on the instrument, it will recognize the volume and the maximum pressure. It can then insure that instrument is not set for example to exceed the maximum pressure. But that is a far cry from what Dr. Wereley seems to be saying.

39. Additionally, I asked Ms. Schaefer about [redacted]

40. Given those metrics, I believe we spent much less time getting the 2040 System machine to perform chromatography. We had no one come in to help us learn how the system operated. All we had was the user manual. Moreover, as I said, the user interface on the 2040 System was not as easy to use as more modern interfaces. That slowed us down a little as well. Nonetheless, we were able to get the 2040 System to perform a chromatography experiment in an amount of time and with an amount of work that was less than or at least in the same range as a user who purchases an accused Bio-Rad device

41. Moreover, to the extent that Dr. Wereley is claiming that some never used before programming had to be done to modify the 2040 System machine to perform chromatography, that is not the case and it is a distortion of the process. The "programming" that Dr. Wereley refers to in paragraphs 340-349 of his rebuttal report is merely selecting from the menu driving system how long and in what order certain components of the system would operate. Those are

values that are available on the system and that the user manual teaches you how to select. Nothing was added to the machine to do this. We just used the existing information available on the machine. This is no different than planning that has to be done on the Bio-Rad or Cytiva machines, which both require that the user create a method before performing a liquid chromatography experiment. See, e.g., BRGEDEL000000497 at BRGEDEL000000703-58 ("Creating a method" section of NGC user guide); GEHCDEL123052 at GEHCDEL123153-67 ("Create a method" section of AKTA avant user manual). Dr. Wereley's characterization of the tests and "programming" are not presented in an accurate manner at all. As I said, the machine was not modified and nothing out of the ordinary was done in using the machine. The fact that the user interface from a machine created in the late 1990's may not have been as easy to use as one created 15 or 20 years later does not mean the earlier machine, in this instance the 2040 System, is not an automated liquid chromatography instrument.

42. Dr. Wereley's claim that the "programming" of the 2040 System to perform liquid chromatography is akin to programming a series of complicated steps for a VCR player that are not described in the system manual is not correct at all. Wereley ¶ 344. Nor is his claim that he has been denied access to programming that was done. The values selected to run on the machine were all saved in a file that was viewable on the 2040 System and that he and his lawyers viewed and appear to have taken pictures of. Those files were also produced to Dr. Wereley. BRGEDEL000610738 - BRGEDEL000610745. The fact that the files could not be easily copied onto a disk or printed is simply a function of the machine being old and me not having access to all the equipment to do such a download when I was asked after the fact during Covid to do so. I note that neither Dr. Wereley nor his lawyers provided me with any of the old devices for such downloads though they have known about the 2040 System machine, and had

the extensive user manual describing how such downloads could be done for more than a year. This whole discussion of lack of access seems to be a diversion to take attention off the real issue: the 2040 System machine easily performed liquid chromatography and was readily programmed to do so.

43. Moreover, the claim that the complicated series of steps were put into the machine that were nowhere described in the manual is clearly not true again. The steps that were performed were very much described in the manual and that is how we learned to do them. For example, there is extensive description for how to use the burette modules and how to set their parameters to sample and dose. For example, the whole Configuration Part of the Manual, (BRGE 3407-3450) which is like a detailed book chapter with six separate sections, describes how to configure the various modules and sensors. *See, e.g.* BRGE 3312-3315, 3443-48 (configuring burette modules). It also describes the input methodology of the user interface which used a single key to represent multiple letters like a phone keypad. The Advanced Operation Part is another detailed chapter with multiple sections (BRGE 3453-3532). For example, at pages 3472-74 there is a description for how to select parameters for the burette modules, how to have the sample detected during a run (BRGE 3476) , how to take actions during a run based on calculations (BRGE 3477-3486), how to add software programs (BRGE 3518) and errors that might occur during a run (BRGE 3521-3528) like some of the time programs may not be compatible with each other. The Basic Operation chapter details many of the same things, including alarms that sense various parameters during a run and take certain actions in response. BRGE 3553-55(showing graph of pH measurements). There are other chapters that provide extensive details for other operations, like the Serial Communication

DATED: November 11, 2020

Bruce K. Gale, Ph.D.

EXHIBIT 7

FILED UNDER SEAL

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

Cytiva Sweden AB et al.,

Plaintiff,

-against- Civil Action No. 18-1899-CFC

Bio-Rad Laboratories, Inc.,

Defendant.

VIDEO-RECORDED DEPOSITION OF
KEVIN PETERSEN
Zoom Recorded Videoconference
11/18/2020
1:37 p.m. (CST)

REPORTED BY: AMANDA GORRONO, CLR
CLR NO. 052005-01

DIGITAL EVIDENCE GROUP
1730 M Street, NW, Suite 812
Washington, D.C. 20036
(202) 232-0646

11/18/2020

1:37 p.m. (CST)

VIDEO-RECORDED DEPOSITION OF KEVIN PETERSEN, held virtually via Zoom Videoconferencing, before Amanda Gorrono, Certified Live Note Reporter, and Notary Public of the State of New York.

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get the device, you know, physically in the location (inaudible) power supply figured out.

I think that, you know, the actual -- during the bulk of the testing happened in probably about a 39-hour time frame. It probably took -- at least in my time. I don't know Travis's time, but it was probably about -- about 40 hours worth of work. With the actual -- once you figured out what the system is actually doing, and you just want to try and run some tests. So it was not a lot.

Q. So when you say -- when you're estimating that 40 hours, what steps were done in those 40 hours?

A. Again, this is where I have to compare what my notebook says relative to when I submitted times to Dr. Gale. So I would suspect that steps that were probably done in that were, one, figuring out how to do the gradients, how to actually pump it, verify that it does pump it, get the programming all done, and actually have it do chromatography and see if it separated anything.

So the bulk of the steps were

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probably done in -- at least in the terms of the time I spent. I don't know about Travis's hours.

Q. Were you provided any documents with the 2040 System?

A. So, I looked for the manuals, because I thought sure we had a manual. But I didn't see any electronic copies of manuals in the documents I provided, so I must have been given a hardcopy manual. So either Travis or I would have followed the hardcopy manual, or even Travis may have hardcopy manual. Travis may have found an electronic manual, but I believe we worked off of a hardcopy manual that came with the instrument.

Q. Were there any other documents that you operated off of?

A. No.

Q. So what was Dr. Gale's role in the Applikon Project?

A. So, he -- he came to us, like I mentioned, and said we'd like you to make this do chromatography. We would give him occasional updates and say this is where we're at, these are the

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problems we're having.

And let's see, later he -- I think we came to him at one point and said we were able to get to do chromatography, and here's some of our data. He's like great, the lawyers would like you to film it now. So okay. So I think we filmed it at some point and said okay, now the lawyers would like you to switch components. So okay, so we moved this to there and that to there. And so we filmed that we could switch it too.

That's -- as far as I remember, that's mostly what -- I think I asked him later, you know, should I go this direction or that direction? He said he didn't think those issues were necessary just yet, or at all. Mostly we just waited for him for general directions as to what he wanted us to do, and we were able to do it.

Q. And you weren't given direction by anyone else?

A. No.

Q. So is if fair to say that the only people involved in the Applikon Project were -- would

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be you, Mr. White, and Dr. Gale?

A. Yes.

Q. Okay. Did you read the entire hardcopy 2040 manual that you mentioned before?

A. No, certainly not.

Q. Do you know what parts of it you read?

A. We would have read the parts related to programming it, we would have read parts related to hardware-specific questions we may have had. I -- I don't remember. Again, this is four years ago since I've even, you know, seen this.

Q. Did you find any sections of the manual that specifically discuss liquid chromatography?

A. It's been too long since I've actually had a manual in front of me to answer that question. I don't know.

Q. Did you find any instructions in the manual for using the 2040 System to perform ion chromatography?

A. Again, I don't remember that one

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A. So the -- the notes that, like I mentioned, you know, Travis would have kept notes on more of the detailed questions on how the programming occurred.

In terms of, you know, what he and I did together, you know, we, of course, figured out how to make the gradient occur, and those notes are reflected there and they're written down. And then they -- they're in a spreadsheet that was provided, as well, that shows how that -- how those calculations were done. So these were done in spreadsheets.

Q. Do you know if Mr. White --

MR. SEBBA: Withdrawn.

Q. Do you know what would have happened to Mr. White's notes?

A. So according to an E-mail that I saw from Dr. Gale, Travis left them in my lab or in my -- in my -- what's it called -- my -- my lab area. And when I moved to Rochester, I think I discarded it. But I have looked everywhere, it's -- among my notebooks, I don't have a copy of it. Unfortunately,

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I don't know what happened to those, other than perhaps I discarded them.

Q. Do you know how Dr. Gale knows that Mr. White left the lab notebook in your lab area?

A. When Dr. Gale, he forwarded the E-mail from Travis to me. And I saw it, he said, see Travis' reply below, so...

Q. When did he forward you that --

MR. SEBBA: Withdrawn.

Q. When did Dr. Gale forward you that E-mail from Mr. White?

A. I don't remember. Within the last two weeks anyway.

Q. Did you provide that E-mail that Dr. Gale forwarded to Mr. Bilsker and Mr. Damon?

A. Yes, I did.

Q. Okay.

MR. SEBBA: David, we're going to request that document.

(Whereupon, a request for Document, was made.)

MR. BILSKER: As I have said before,

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requesting factual information from a fact witness is well beyond the fact discovery period.

THE TECH: Mr. Bilsker, do you know how to dial in on your phone?

MR. SEBBA: If this is going to take time, let's go off the record.

THE TECH: It may take a couple minutes.

MR. SEBBA: Well, we're not -- if you're putting an artificial deadline on this, we're not going to waste time with your technical -- technological issues on the record.

MR. BILSKER: I'm using the system that you've set up. I've never had a problem before. The court reporter for some reason says she can't hear me, that's not my problem.

MR. SEBBA: It's your microphone on your -- on your system. That's the issue, because everyone else is fine.

MR. BILSKER: I object. I object. Your Document is not proper.

MR. SEBBA: All right. Let's

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continue.

BY MR. SEBBA:

Q. Dr. Petersen, would there have been other documents that were -- that were used in planning the development of the program chrom test on this 2040 System?

A. No. Other than what I've mentioned, no.

Q. Was this program run on the 2040 --

MR. SEBBA: Withdrawn.

Q. Was the program chrom test run on the 2040 System?

A. I would assume all of the ones that I actually wrote are -- are -- were run on the system at some point.

Q. Who would have run them?

A. Either Travis or myself.

Q. And what was the result of running chrom test?

A. I don't remember what was the result of running chrom test itself. When you're developing a program, you always go through various

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THE TECH: (Complying.)
Q. All right. Let's focus on the program titled chrom test2. So you believe that you and Travis White created the program chrom test2, correct?
A. Yes.
Q. Would that program have been entered through the interface shown in this photo of the 2040 System?
A. Yes.
Q. Who would have entered it?
A. Travis primarily, and then I would have also entered things as well.
Q. Who would have been present while you and Travis were entering all the steps in this program?
A. Just Travis or I.
Q. And how long would that have taken?
A. I don't remember, unfortunately. It didn't seem like it took too long, but it was a very bold interface, and so it wasn't as easy as just typing in a value. You had to literally go through

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and add each one.
Q. Do you have an estimate on how long it took?
A. I -- unfortunately, I'm not the best person to ask on the estimate of time, simply because it's so long ago. But it does -- it was not -- it didn't seem like it took an unreasonable amount of time.
Q. Would have that been recorded in the timesheet that you provided to Mr. Bilsker and Mr. Damon?
A. The time that it spent to physically stand up the instrument and program in the inputs? Is that the question?
Q. Yes.
A. No. It wouldn't be reflected there.
Q. Okay. How many inputs were required to create the program chrom test2?
A. I don't remember. But the program is on the instrument, so you can see for yourself.
Q. Were there any documents used as a reference during the programming of chrom test2?

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A. The manual I'm sure Travis would have used.
Q. Were there any notes referred to during the programming of chrom test2?
A. Again, it would have been in Travis's notebook.
Q. Okay. Were there any flow charts created when programming chrom test2?
A. No. Not that I'm aware.
Q. And so was chrom test --
MR. SEBBA: Withdrawn.
Q. Was the program chrom test2 run as part of the Applikon Project?
A. Yes.
Q. By whom?
A. By myself and by Travis.
Q. And what were the results?
A. That we were able to put a dye into a chromatography column automatically hands off, and then change the gradient across that chromatography column, and then dilute the individual dyes in almost a baseline fashion. In other words, it worked very

Page 100

well. It was also very reproducible. Every time we run that it gave very reproducible values in terms of the times the dyes came off, and just the order of things like that. It was very reproducible.
Q. How many times did you run that experiment?
A. I think two or three. I'd have to look at the final report.
Q. Do you remember when you first were able to run that experiment?
A. Not exactly. And when you say "that experiment," you remember there's a -- there's an iterative process, right? Where you run it and say, do I need to change the program at all? If it works, then you say, okay, that's good, and you don't touch the program anymore.
Q. Approximately how many iterations of this program did you create in the Applikon Project?
A. I don't know. If you were to look at the actual panel and say, oh, all of those are different programs and how many iterations were there? It depends on what you call an iteration.

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reliance on Dr. Petersen's work.
THE WITNESS: What is Exhibit 4? Can you remind -- can you remind me what that one is?
MR. SEBBA: That's your lab report.
THE WITNESS: Oh, okay. So it was -- I -- I want to clarify your statement, Mr. Sebba. I didn't necessarily draft it. It's definitely a joint report with Travis and myself, you know. It -- it may have been that Travis -- in fact, probably Travis typed up the initial draft and I edited it from there.
MR. SEBBA: Understood. Thank you for the clarification.
MR. BILSKER: And just to respond to you, Mr. Sebba. I don't think that changes anything. It doesn't move the needle. You don't understand the Federal Rule of Civil Procedure 26.
The language of Federal Rule of Civil Procedure 26 clearly says, someone who you are going to rely on. Dr. Gale relied on his -- on Dr. Petersen's report and the data, so there's nothing improper about anything that we did.

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Anyway, Dr. Petersen, thank you very much for your time. Sorry that you had to be inconvenienced. I'll let you get back to your family and dealing with all of those things that we have to deal with right now with COVID.
MR. SEBBA: Thank you for your time, Dr. Petersen. We appreciate it.
THE WITNESS: Oh, thank you to everyone who's involved in this process. Thank you. I learned a lot, and it's -- it's been a fun experience. And good luck to both of you in your prospective works. So thank you.
MR. SEBBA: Thanks.
MR. BILSKER: Yeah. We can go off the record, but, Kevin, I do have a question for you.
THE VIDEOGRAPHER: Okay. Is there anything else we need to get on the record?
MR. SEBBA: Nothing else.
THE VIDEOGRAPHER: Okay. The time is 5:07 p.m., and this concludes today's video deposition of Kevin Petersen.
(Time Noted: 5:07 p.m. (CST)

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CERTIFICATE OF SHORTHAND REPORTER-NOTARY PUBLIC

I, Amanda Gorrono, the officer before whom the foregoing deposition was taken, do hereby certify that the foregoing transcript is a true and correct record of the testimony given; that said testimony was taken by me stenographically and thereafter reduced to typewriting under my direction; and that I am neither counsel for, related to, nor employed by any of the parties to this case and have no interest, financial or otherwise, in its outcome.

IN WITNESS WHEREOF, I have hereunto set my hand this 18th day of November, 2020.

_____

AMANDA GORRONO, CLR
CLR NO: 052005 - 01

Notary Public in and for the State of New York
County of Suffolk
My Commission No. 01G06041701
Expires: 01/07/2023

Page 176

Kevin Petersen, c/o
QUINN EMANUEL URQUHART & SULLIVAN LLP
50 California Street, 22nd Floor
San Francisco, California 94111

Case: Cytiva Sweden AB, et al. v. Bio-Rad Laboratories, Inc.
Date of deposition: November 18, 2020
Deponent: Kevin Petersen

Please be advised that the transcript in the above referenced matter is now complete and ready for signature. The deponent may come to this office to sign the transcript, a copy may be purchased for the witness to review and sign, or the deponent and/or counsel may waive the option of signing. Please advise us of the option selected. Please forward the errata sheet and the original signed signature page to counsel noticing the deposition, noting the applicable time period allowed for such by the governing Rules of Procedure. If you have any questions, please do not hesitate to call our office at (202)-232-0646.

Sincerely,
Digital Evidence Group

Digital Evidence Group, L.L.C.
1730 M Street, NW, Suite 812
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SIGNATURE PAGE
Case: Cytiva Sweden AB, et al. v. Bio-Rad Laboratories, Inc.
Witness Name: Kevin Petersen
Deposition Date: November 18, 2020

I do hereby acknowledge that I have read and examined the foregoing pages of the transcript of my deposition and that:

(Check appropriate box):
( ) The same is a true, correct and complete transcription of the answers given by me to the questions therein recorded.
( ) Except for the changes noted in the attached Errata Sheet, the same is a true, correct and complete transcription of the answers given by me to the questions therein recorded.

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ERRATA SHEET

Case: Cytiva Sweden AB, et al. v. Bio-Rad Laboratories, Inc.
Witness Name: Kevin Petersen
Deposition Date: November 18, 2020
Page No. Line No. Change

_____ _____
Signature Date

EXHIBIT 8

FILED UNDER SEAL

EXHIBIT 9

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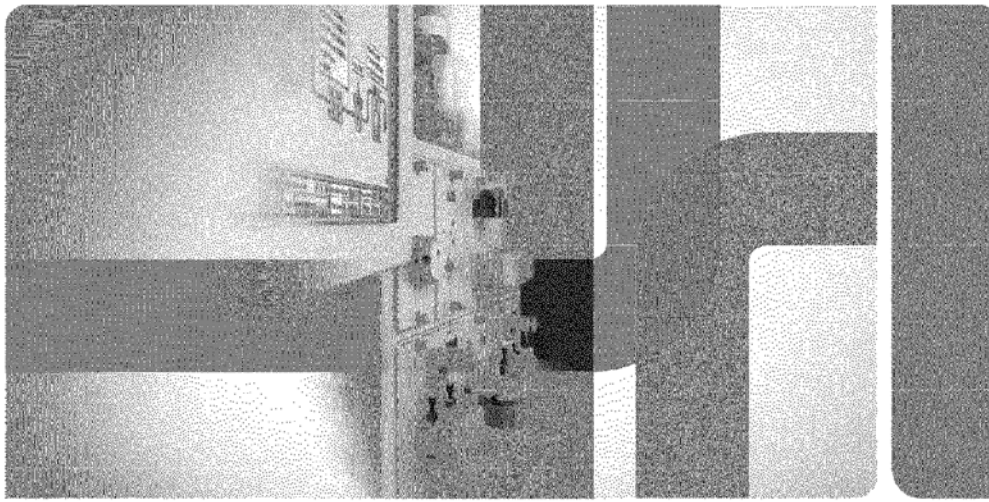
Chromatography



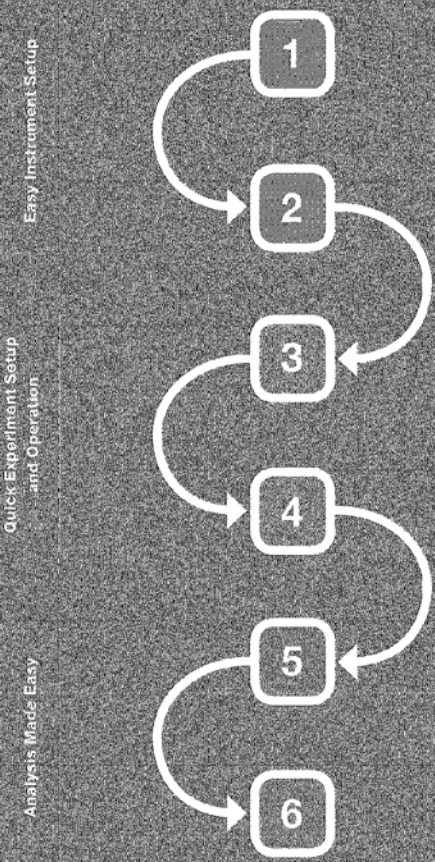
NGC Chromatography Systems

Comprehensive Solutions for Protein Purification

BIO-RAD

ADAPTS

Powerful ChromLab Software control, transferable across all NGC Systems, enables minimal training and fast setup to analysis.



Easy Instrument Setup

Guided fluidics selection allows application-based system setup with patent-pending adjustable fluidics selector

Point-to-Point lighting provides step-by-step LED guided setup for easy plumbing and eliminates the potential loss of precious sample or waste of expensive columns

Quick Experiment Setup and Operation

Quick and easy method set-up and design using the powerful, intuitive ChromLab Software

Real-time flow path display controls buffer, sample, and valve position for easy identification of system status

Analysis Made Easy

Integrated data analysis with easy integration of multiple peaks and runs

Stain-free technology allows protein separation, gel imaging, and analysis in less than 30 min

EXHIBIT 10

FILED UNDER SEAL

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

CYTIVA SWEDEN AB and GLOBAL LIFE SCIENCES SOLUTIONS USA LLC Plaintiffs, v. BIO-RAD LABORATORIES, INC., Defendant.	Civil Action No. 18-1899-CFC Consolidated

EXPERT REPORT OF PROFESSOR JAMES R. KEARL

[redacted]

118. [redacted]

[redacted]

119. [redacted]

[redacted]

Table 4: Summary of Licenses Produced by Bio-Rad and Cytiva[148]

[redacted]

[148] See Exhibit F for more details

Licensor	Licensee	Royalty Rates
[redacted]		

120. With the exception of the [redacted], all of the remaining licenses in Table 4 have [redacted]

121. With regard to the license in Table 4, Mr. Bone does present some, limited, summary information that I provide here with some additional information from the licenses, as appropriate, for context.[149]

[redacted]

- [redacted].

[149] Bone Report, pp. 99-101.

122. Mr. Bone's summary of his review of the licensed technologies suggests that they generally address function (the actual science being performed) rather than form (the design of the box within which the science is done).[150] Although both function and form matter and the market success of Cytiva and Bio-Rad devices have demonstrated with their respective AKTA and NGC systems that ease of use improvements has value, more value is attributable to the function of the systems.[151] However, Mr. Bone's per-unit dollar royalty implies that the modularity and flexibility he purports to have valued is at least [redacted] than licenses the parties have entered into that address function.

123. The royalty rates in Table 4 range between [redacted] with the majority between [redacted] By contrast, Mr. Bone's implied percentage royalty rates are in some cases near 14% for the low-end NGC Quest. To support implied royalty rates that are of this magnitude, Mr. Bone has to be implicitly assuming that the "flexible modularity" enabled by the in-suit patents is substantially more valuable than any of the technologies covered by the licenses in Table 4. Neither Mr. Bone nor I is qualified to determine the relative value of the particular in-suit technologies, but Mr. Bone cites to no evidence suggesting that the in-suit technologies are among the most valuable aspects of the devices[152]. And, as I noted above, the value of these devices is primarily in their ability to do a particular kind of chromatography not in the form of the devices.

GP #3: The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.

124. I assume that the hypothetical negotiation between GE and Bio-Rad would have been for a non-exclusive, worldwide license [redacted]

[150] See Bone Report, para 173.

[151] See Gale Rebuttal Report Section IV.

[152] See Gale Rebuttal Report Section IV.

[redacted]

GP #4: The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.

125. The parties are competitors in the space for customers wishing to purchase medium pressure liquid chromatography equipment and, as such, Cytiva would be reluctant to license a technology that might give it market power. Further, Mr. Sorby testified that he is unaware of any Cytiva inquiries into licensing the patents-in-suit and that Cytiva has not attempted to license the patents-in-suit.[153] If the technology indeed grants market power, a fact that Mr. Bone has not demonstrated, then Cytiva would seek a royalty rate that would compensate any loss of market power due to licensing a competitor.

126. In this instance, the Book of Wisdom suggests that the patents-in-suit do not push customers toward a single medium-pressure liquid chromatography supplier. Cytiva's overall market share is between 50-60% and Bio-Rad's is in the 6% range worldwide. Moreover, GE was the largest player in this field before the patents-in-suit and there is no quantitative evidence that suggests that its market share increased after embodying the technology in its current AKTA line. There is also no evidence that Cytiva's market share decreased with Bio-Rad's launch of its NGC line.[154] Hence, Cytiva's market power due to the in-suit patents, if any, is limited and would not push the royalty rate up in a hypothetical negotiation.

---

[153] Sorby Deposition, p. 47:16-22.

[154] [redacted] Emilsson Deposition, pp. 96-100.

GP #10: The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.

135. The patents-in-suit are practiced in certain AKTA systems and the design of these systems allow for the customization of the instruments with alternative modules that can be swapped in and out with relative ease as customers' needs change. [redacted] By entering into a license with Cytiva, Bio-Rad would avoid the cost of implementing the design around options it had available to it.

136. But since the value to consumers of the functionality enabled by the patents-in-suit is based on actual consumer purchases, the hypothetical negotiation would result in a modest royalty rate. Since my proposed upper bound of [redacted] falls well within the range of actual licensed technologies, there is no reason to expect that it would be outside this range. [170] There is certainly no support for Mr. Bone's implied royalty rates of up to 14% or his overall average implied royalty rate of 8.6%.[171]

GP #11: The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.

137. Bio-Rad upgraded its chromatography instrument portfolio with the development of its NGC systems. Assuming infringement of the patents-in-suit, Bio-Rad has made use of the patented technology and Mr. Bone has estimated the total revenue of these

[168] Wereley Report at para 62. Conversation with Phillip Chapman on October 14th, 2020.

[169] See Bone Exhibits 12.1-12.16.

[170] See Table 4.

[171] See Exhibit B; Para 101.

systems to be [redacted] and estimated gross profits of [redacted] over a nearly six-year period, with an additional [redacted] in revenue and [redacted] in estimated gross profits of modules.[172] However, more than [redacted] of accused instrument revenues and profits derive from Bio-Rad's entry-level Quest system which Mr. Bone has not demonstrated would be in full, or in-part, captured by Cytiva.[173] Further, since Mr. Bone has not determined an appropriate apportionment to the incremental modularity or customer use of that modularity, the value of the patents-in-suit on the NGC revenues and profits have not been shown to be an important the driving factor that would warrant a high royalty rate.

GP #12: The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.

138. The licenses provided in this matter covering different functional and form technologies, show that the portion of the selling price that is captured by a royalty to be between [redacted] with the majority being in the [redacted] range.[174] Importantly, none of the licenses have royalties close to Mr. Bone's implied high rate of 14% or mean of nearly 9%, including licenses for technologies that are functional and not just form related.[175]

[172] Bone Tables 10, 11.

[173] See Bone Table 10. $21,188,365/$22,363,588 = 95%.

[174] Table 4.

[175] See Exhibit B; Para 93

GP #13: The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.

139. The function versus form distinction made elsewhere in this report strongly implies that most of the value of the devices the two parties sell is due to their use by purchasers to do chromatography. Dr. Gale's discussion of form and functionality support my conclusion that the value of the patents-in-suit when considered in a hypothetical negotiation would warrant a reasonable royalty rate no greater than [redacted] (in contrast to Dr. Gale's discussion of form and functionality support my finding that the value of the patents-in-suit lend themselves to a discussion of form with a lower reasonable royalty rate (in contrast to Mr. Bone's implied royalty rates of up to 14%).[176]

140. A lower royalty rate is also consistent with most of the revenue covering the value from the important non-patented element: chromatography and the costs of bringing devices that do chromatography to market.[177]

GP #14: The opinion testimony of qualified experts.

141. My opinion regarding the appropriate royalty rate in this matter is based on the Expert Rebuttal Report of Dr. Bruce Gale and the conversations I have had with him.

[176] See Sections IX and X of Gale Rebuttal Report.

[177] *Id.*

move en masse to purchase devices from Cytiva at higher prices rather than from non-infringing alternatives at lower prices, including an improved DuoFlow product that Bio-Rad would have a strong incentive to supply to the market.

156. With regard to one group of customers, [redacted][189] In other words, there are customers who are particularly price sensitive and therefore unlikely to purchase Cytiva's high-priced products if low-priced non-infringing substitutes are available. If Bio-Rad's NGC products were to be barred from the market and Cytiva is unable or unwilling to lower its prices sufficient to appeal to the price-sensitive customers that previously purchased Bio-Rad's NGC products, it is likely that Cytiva would both earn no profits among this customer segment and forgo the royalties it could have earned on Bio-Rad's sales of NGC products to these customers. Furthermore, if Cytiva does not market to price-sensitive customers and Bio-Rad cannot sell its NGC products, this price-sensitive market segment would be deprived of an option it now has.

Respectfully submitted this 21st day of October 2020,

James R. Kearl

[189] Deposition of Anna Emilsson, June 25, 2020, pp. 101:4-13.

Exhibit F. Licenses Produced by Bio-Rad and Cytiva

Licensor	Licensee	Effective Date	Licensed Products/Process	License Notes	License Fee	Royalty Rate	Royalty Base and Fee Notes	Result of Past Litigation
[redacted]								

Licensor	Licensee	Effective Date	Licensed Products/Process	License Notes	License Fee	Royalty Rate	Royalty Base and Fee Notes	Result of Past Litigation
[redacted]								

Sources:
[1] BRGEDEL000609926
[2] BRGEDEL000610007
[3] BRGEDEL000610047
[4] BRGEDEL000610069
[5] BRGEDEL000610088
[6] BRGEDEL000610110
[7] BRGEDEL000610219
[8] BRGEDEL000610247
[9] BRGEDEL000610423
[10] GEHCDEL551040
[11] GEHCDEL551060

EXHIBIT 11

FILED UNDER SEAL

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CYTIVA SWEDEN AB, et al.,)
)
Plaintiff,)
v.) Case No. 1:18-CV-
) 01899-CFC
BIO-RAD LABORATORIES,)
INCORPORATED,)
)
Defendants.)

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY
UNDER THE TERMS OF THE PROTECTIVE ORDER
DEPOSITION OF JAMES KEARL, PH.D.
APPEARING REMOTELY
Monday, November 23, 2020
9:59 a.m., Mountain Time

Reported by: Lori J. Goodin, RPR, CLR, CRR,
RSA, California CSR #13959

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Laboratories, Incorporated
Monday, November 23, 2020
Lori J. Goodin, RPR, CLR, CRR,
RSA, California CSR #13959

KEARL

EXHIBIT	DESCRIPTION	PAGE
Exhibit 309	Dr. Kearl's Expert Report	9
Exhibit 310	Errata to Dr. Kearl's report	9
Exhibit 311	Expert Report of John Bone, CPA	9
Exhibit 312	Rebuttal Expert Report of Dr. B. Gale	9

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EXHIBIT	DESCRIPTION	PAGE
Exhibit 313	Reply report of Mr. Bone	9
Exhibit 314	Microeconomics Theory - Basic Principles and Extensions, 11th Ed., excerpt, BRGEDEL610783	47
Exhibit 315	Bio-Rad document used in Footnote 59 of Dr. Kearl's Report, BRGE00006279-301	56
Exhibit 316	Bio-Rad's 4th Supplemental Responses to first set of Interrogatories	107
Exhibit 317	Deposition transcript of P. Chapman	111
Exhibit 318	[redacted] BRGEDEL3000238	
Exhibit 319	[redacted] BRGEDEL610435	146
Exhibit 320	[redacted] BRGEDEL610276	146
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Exhibit 323	[redacted] BRGEDEL610423	
Exhibit 324	[redacted] BRGEDEL610047	253
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(All exhibits were provided
electronically to the reporter.)

that answer?
MR. CORREDOR: Yes, Dr. Kearl, you should feel free to do so.
THE WITNESS: Okay, then, Mr. Bone is correct that I did not, and I should have on the sales commission.
If you do that, it is a tiny amount of money; it is a couple hundred thousand dollars.
So, that is an error in my calculation that I own up to and is easily corrected.
BY MS. DEWITT:
Q. You didn't include it in your errata, did you?
A. No, the errata was stuff that is just in the report. I have just told you now that it is a small error.
Well, it is a conceptual error that has a small dollar amount attached to it.
Q. I believe we talked earlier, Dr. Kearl, about getting some updated sales estimates

that you were going to send to Felipe?
A. Yes.
Q. Have you sent those -- I'm sorry, they were lost profit estimates?
MR. CORREDOR: I believe it was royalty.
THE WITNESS: Yes, these are reasonable royalty estimates. And I will send them to him at the next break.
Felipe do you have them?
MR. CORREDOR: No, I do not.
MS. DEWITT: Well, I'm about to move into your reasonable royalty analysis, so if they are relevant to your opinions there, maybe we need to take a break now so we can get them.
THE WITNESS: Well, I can do this in two seconds, so --
MS. DEWITT: Okay.
THE WITNESS: Okay. I just sent it to Felipe.
BY MS. DEWITT:

Q. Okay. We will get started and then -- Dr. Kearl, it is your opinion that if lost profits are not available, then an appropriate royalty rate is [redacted] percent of net sales of accused instruments and modules. Correct?
A. Yes. But the correction that, or not the -- not the correction, the additional calculations that Felipe will be sending you, as I indicated first thing this morning, you could think of a hypothetical negotiation occurring with an expectation of use dependent on the number of customers. That is the way I calculated it, if you do that you get to the 2 percent.
Or Mr. Bone pointed out that you could think of it as a number of customers weighted by their expenditures, so your revenues. And if you do that, I have recalculated with, consistent with his criticism, and you get a royalty rate that is [redacted] percent.
Q. So, which royalty rate are you

offering in this case as the royalty rate that the parties had decided upon at the hypothetical negotiation?
A. Both are defensible, again it depends on how you think the hypothetical negotiation is set out.
But if you take the standard damages expert's position to be the more conservative then you would take the 3.5.
Q. Okay. Let's stick with your 2 percent rate for the time being since that is what your report was centered upon.
And one of the bases you rely on to opine that 2 percent is appropriate, is to compare that rate to the range of the royalty rates of the licenses that were produced in this case. Correct?
A. That is not correct.
Q. What is not correct about it?
A. Well, I estimate the 2 percent using Mr. Bone's approach to deriving the amount that end users are willing to pay for what he, what he

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Q. Is it fair to say that you are using these licenses as a reasonableness check on your royalty rate vis-à-vis Mr. Bones?

A. Yes, just in the sense of if you thought about the set of licenses that are listed there as being more expansive and the license would come out of the hypothetical negotiation that would be worth more in some sense to the parties than it is surprising that Mr. Bone believes that the royalty rate would be 14 percent.

When you see the parties sort of licensing other important stuff for rates well below 14 percent.

Q. If you did not include, if we did not have the licenses in Table 4, would you still believe that the [redacted] percent royalty is reasonable?

MR. CORREDOR: Object to the form.

THE WITNESS: Mine?

BY MS. DEWITT:

Q. Yes, your [redacted] percent reasonable royalty rate.

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A. No, well if you look at the comparable licenses that Dr. Gale believes are comparable, then yes, it is in that range which I think is [redacted] or something in that place.

So, relative to what he determines to be comparable licenses, then the royalty rate I derive makes sense.

But I want to be very clear that the, I'm using Bone's approach, Mr. Bone's approach and Mr. Bone's approach, for reasons I detailed this morning, makes absolutely no sense.

So, I don't think he has a methodology or I'm certain that he doesn't have a methodology that has derived a reasonable royalty that would be the outcome of a hypothetical negotiation between parties intent on licensing the technology here. He just has not valued the technology.

Q. Did we agree earlier that your reasonable royalty rate is derived from Mr. Bone's methodology?

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A. It is. And I'm just saying that I don't think he did it right. Therefore, I don't think the [redacted] percent is, since his methodology is flawed, then the [redacted] percent can't be correct either.

Q. You have your own methodology that you have proffered in your opinion as to a reasonable royalty rate in a hypothetical negotiation?

MR. CORREDOR: Object to form.

THE WITNESS: No, I have relied primarily on his approach to say if you made some adjustments to his approach, what is the reasonable royalty you would get and you will get [redacted].

But I also want to make clear that I don't think his approach, methodologically, makes any sense.

BY MS. DEWITT:

Q. And you did not come up with your own approach, correct?

A. No.

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MR. CORREDOR: Object to the form.

BY MS. DEWITT:

Q. Okay. You understand that if you want to rely on royalty rate from another license agreement that the license you compare must be both technically and economically comparable, correct?

A. Correct.

Q. For example, in Paragraph 117 of your report you cite to Mr. Bone's report in his citation from a federal circuit case in the first sentence, and in the next sentence you state, "However licenses even when not informative with regard to royalty rates, because they are judged not to be comparable, may be informative with respect to other characteristics of a hypothetical negotiation."

Do you see that?

A. Right.

Q. So, it is your understanding that if the technology is not comparable, then the royalty rate is not informative. Correct?

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MR. CORREDOR: Object to form.
THE WITNESS: Well, it is not a point estimate of the reasonable royalty that would come out of a hypothetical negotiation. I agree to that.
But as I just indicated if you had royalties that were no higher than [redacted], for technologies that are functional and not just form factors, then you might question a form factor royalty that is in excess of that by these same parties.
See, it is just a way thinking about whether or not 14 percent makes any sense.
But that is not directly why I used these, or, the point of this sentence is, that even if the law says you have to have a very close match in order to use the royalty in one for the royalty for the other, that doesn't mean that you can't get good information from the types and the structure and the form of the licenses about how the hypothetical negotiation would unfold.

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BY MS. DEWITT:
Q. The last sentence of Paragraph 117 you write, "These characteristics include features such as type of royalty, exclusivity, regions in which the licenses can be practiced, the presence or absence of field of use restrictions."
Do you have a particular source for that understanding?
A. No, this is just how licensing people would think about licenses, and, economic experts would think about licenses, which is they tell you something about how people undertake and think about licensing.
So, let me give you an example. I did a case a number of years ago that had 1,000 licenses in it that had been disclosed by both sides. There was, there was not a single lump sum license in the thousands, they were all running royalties.
The expert on the other side had argued that out of the hypothetical negotiation

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between these parties, would come along some license.
And you looked at the thousand licenses and you said these were negotiated along and they never negotiated a lump sum license.
So, why would I believe that that would be the outcome of a hypothetical negotiation.
That is a useful insight that economics brings about thinking about the hypothetical negotiation.
Q. Let's go to Table 4. Did you discuss any of these licenses with Dr. Gale?
A. Did I --
Q. Discuss any of these licenses with Dr. Gale.
A. I discussed the two that he judged to be comparable.
Q. If you could not rely on any of the licenses from Table 4, would you still believe your [redacted] percent or your [redacted] percent, [redacted] percent reasonable royalty rate would be

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reasonable?
MR. CORREDOR: Object to form.
THE WITNESS: Well a good answer to that is in the negative which is, in my --
My opinion in this matter is that Mr. Bone does not have a methodology that reliably estimates a reasonable royalty. So that his reasonable royalty estimates make little sense.
But even if you took them for what they were, you accepted everything that he assumed, and all of the mistakes he made that, and you corrected for some very simple adjustments, that you would not have royalty rates between 9 and 14 percent but you would have a royalty rate that was much lower in the [redacted] to [redacted] and a half percent range.
BY MS. DEWITT:
Q. If you could not rely on any of the license agreements in Table 4 would you have any basis to say that Mr. Bones implied 14 percent royalty rate is unreasonable based on a

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consideration of the form versus function?
MR. CORREDOR: Object to the form.
THE WITNESS: No, it is the form versus function matters here and Dr. Gale's view of the form versus function.
So, I might rely on Dr. Gale to the degree that he opines that form is worth a lot more than, that the function is worth a lot more than form.
But you are right I would not have any markers to look to.
In which case, you know, you might want to look at a broader set of technology licenses and ask whether or not any of them are in the 14 percent range for things like form factors, I did not do that.
BY MS. DEWITT:
[redacted]

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[redacted]
Q. Dr. Gale has not made any comparison of the technology covered by this license. Correct?
A. I don't know that. It is my understanding, but you would have to sort of review his report.
It is my understanding that he considered all of the licenses in deriving the two that he thought were comparable licenses.
Q. Are you relying on any comparison by Dr. Gale as to the technology covered by this license against the technologies of the patents in suit?
A. No, I have only relied on the two licenses that in his opinion are comparable licenses.
Q. And you are not qualified to perform any sort of technology comparison for this

[redacted]

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license, correct?
A. That's correct.
Q. So, are you aware of any evidence in the record as to any technical comparability between this license and the license of the hypothetical negotiation?
A. I don't understand the question. I'm sorry.
Q. I will re --
I will strike that and ask another one?
[redacted]
A. Are you excluding expert reports from the record evidence?
Q. No, if you can point me to somewhere in an expert report that it has compared the technology, I would consider that record evidence?
A. I think Dr. Gale does that.

have summarized with some additions in Paragraph 121.

BY MS. DEWITT:

Q. Well let's, you cite Footnote 150, which is Bone report Paragraph 173.

So, why don't you look to see what Mr. Bone has done.

A. Fair enough.

MS. DEWITT: I will ask to call that up.

It is Paragraph 173, Andy, I don't know if it is a lag -- okay.

BY MS. DEWITT:

Q. So, this is what you, this is the Footnote 150 from your report. Is that what you describe as his summary of, Mr. Bone's summary of his review of the licensed technologies?

And what in Paragraph 173 led you to state that this review suggests that they generally address function rather than form?

A. The second sentence, [redacted]

table on page, Paragraph 121 is that --

Q. Let's stick for a minute here, let's stick with the Bone report. Mr. Bone never refers to the license as addressing form versus function, correct?

A. That's correct.

Q. Okay. He's not qualified to perform any technical comparison between a license and the asserted patents. Correct?

A. I agree. But he characterizes them in a certain way, right? [redacted]

Q. Mr. Bone never uses the words "form versus function" to describe or classify any of these agreements, correct?

A. You just asked me that. And the

[redacted]

Can we go back to his report so we can look at the sections in which he talks about these reports? Or these things that summarized in Paragraph 121.

So, it is Bone report Pages 99 through 101.

THE VIDEOGRAPHER: Am I going to 99?

MS. DEWITT: Yes, please, Andy. Sorry.

THE WITNESS: Is it okay if we go to the next page.

BY MS. DEWITT:

Q. Are you still reviewing?

A. I am, yes.

Q. Okay. Let me know when you are done.

A. Yes. I mean in the way that Mr. Bone characterizes them is, in my summary

answer was, that is correct.

Q. That is your interpretation of the license as either form versus function?

A. Yes, I think it is a fair reading.

[redacted]

sections of the, of Dr. Gale's rebuttal report?
A. Yes.
MR. CORREDOR: Could we pull that up, Exhibit 312? And I want to go to Paragraph 306 which is at the bottom of Page 91, running onto the next page.
BY MR. CORREDOR:
Q. Do you recognize these pages as the pages relating to the non-infringing alternative that we have been discussing?
A. Yes.
Q. And do you see the last sentence in Paragraph 306 that says, [redacted]
A. Yes.
Q. Does that support your opinion that customers don't care about what is under the hood?
MS. DEWITT: Object to form.
THE WITNESS: Yes, the, I mean this is a technical opinion, and I have no opinion

about the technical opinion.
But it is, it doesn't matter how you accomplish the task as long as it is accomplished in a way that is not interfering with what you really want to do, then you shouldn't care particularly what is under the hood.
Q. Great. That is all I had for this one. And then I have a couple of questions.
MR. CORREDOR: We can close out of this report.
BY MR. CORREDOR:
Q. And do you also remember testifying about two comparable licenses you relied upon?
A. Yes.
MS. DEWITT: Object to form.
BY MR. CORREDOR:
Q. And those two licenses were the [redacted] licenses?
A. Yes.
Q. And that you relied on those licenses in Section 8 of your report starting at

Paragraph 143.
A. Correct. Well, I don't know the paragraph. I know it is at the end of the report, so ...
Q. Right. Is it your opinion that these licenses are consistent with a reasonable royalty of 2 percent?
A. Yes.
Q. Okay. That is all I have, Dr. Kearl, thank you.
MS. DEWITT: No additional questions on my end.
THE VIDEOGRAPHER: All right. Is there anything else we need to do before we go off the record? No? All right.
MS. DEWITT: Not on my end.
THE VIDEOGRAPHER: The time is 5:08 p.m. and this concludes today's video deposition of James Kearl.
(Whereupon, signature not having been waived, the deposition ended at 5:08 p.m.)
* * *

CERTIFICATE OF COURT REPORTER
I, LORI J. GOODIN, RPR, CLR, CRR, CA CSR # 13959, the reporter before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was sworn by me; that the testimony of said witness was taken by me in machine shorthand and thereafter transcribed by computer-aided transcription; that said deposition is a true record of the testimony given by said witness; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken; and, further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially or otherwise interested in the outcome of this action.

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My Commission expires: May 12, 2024
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My Commission expires: August 2, 2021
DISTRICT OF COLUMBIA, WASHINGTON DC
My Commission expires: May 14, 2021
COMMONWEALTH OF VIRGINIA, COUNTY OF FAIRFAX
My Commission expires: February 28, 2022
STATE OF DELAWARE: COUNTY OF KENT
My Commission expires: October 9, 2021
STATE OF PENNSYLVANIA, COUNTY OF LEHIGH
My Commission expires: April 5, 2021

James Kearl, Ph.D., c/o
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Case: Cytiva Sweden AB, et al. v. Bio-Rad Laboratories, Inc.
Date of deposition: November 23, 2020
Deponent: James Kearl, Ph.D.

Please be advised that the transcript in the above referenced matter is now complete and ready for signature. The deponent may come to this office to sign the transcript, a copy may be purchased for the witness to review and sign, or the deponent and/or counsel may waive the option of signing. Please advise us of the option selected. Please forward the errata sheet and the original signed signature page to counsel noticing the deposition, noting the applicable time period allowed for such by the governing Rules of Procedure. If you have any questions, please do not hesitate to call our office at (202)-232-0646.

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SIGNATURE PAGE
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Witness Name: James Kearl, Ph.D.
Deposition Date: November 23, 2020

I do hereby acknowledge that I have read and examined the foregoing pages of the transcript of my deposition and that:

(Check appropriate box):
( ) The same is a true, correct and complete transcription of the answers given by me to the questions therein recorded.
( ) Except for the changes noted in the attached Errata Sheet, the same is a true, correct and complete transcription of the answers given by me to the questions therein recorded.

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ERRATA SHEET

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Witness Name: James Kearl, Ph.D.
Deposition Date: November 23, 2020
Page No. Line No. Change

_____ _____
Signature Date